

Richards Topical Encyclopedia

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THE ANIMAL KINGDOM

BIRDS

(For specific facts relating to this subject consult the Index)

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KEY TO PRONUNCIATION

ā, as in māte	oi, as in toil
á, as in senāte	ōō, as in soōn
â, as in hâir	öo, as in böök
ă, as in hăt	ou, as in shout
ä, as in fäther	s, as in so
â, a sound between ä and ă, as in	sh, as in ship
căstle	th, as in thumb
ch, as in chest	th, as in thus
ē, as in ēve	ū, as in cūre
ê, as in rêlate	û, as in accūrate
ě, as in běnd	û, as in fûr
ê, as in readēr	ű, as in űs
g, as in go	ű, a sound formed by pronouncing ē
ī, as in bīte	with the lips in the position for
ĭ, as in ĩnn	ōō, as in the German <i>über</i> and the
k, as in key	French <i>une</i>
K, the guttural sound of ch, as in	zh, as in azure
the German <i>ach</i> , or the Scotch <i>loch</i>	', an indication that a vowel sound
n, as in not	occurs, but that it is elided and
N, the French nasal sound, as in <i>bon</i>	cannot be identified, as in apple
ng, the English nasal sound, as in	(ăp'ŭl)
strong	A heavy accent (') follows a syllable
ō, as in bōne	receiving the principal stress,
ô, as in Chrístopher	and a lighter accent (˘) follows a
ô, as in lôrd	syllable receiving a secondary
ö, as in hôt	stress.

The STORY of BIRDS

Reading Unit No. 1

SPRING IN BIRDLAND

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

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The home life of baby birds, 4-8
Why birds are useful citizens, 4-8-9-10
Why we must protect birds, 4-11-12
How birds differ from other animals, 4-12-13

Things to Think About

Why do birds come back each spring?
How far do some birds fly in their travels?
Why does a bird sing?
How many nests do birds build

each season?
Why would the total absence of birds ruin our country?
In what ways do birds differ from other creatures?

Picture Hunt

What birds migrate in V-formation? 4-1
What bird lines its nest with fluffy cotton and string? 4-4
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Summary Statement

Springtime brings the music of birds that have come back to build nests and raise their young. Birds are the only animals with

feathers. The brightness of their feathers, their songs, and their usefulness make us eager to protect them.

-SPRING IN BIRDLAND



Photo by American Museum of Natural History

The approach of spring is heralded by these Canada geese. From their winter homes in the southern states they fly in characteristic "V"-shaped formation to their

nesting grounds in the far north. The strongest member of the flock, flying at the point of the "V," lessens the resistance of the wind for the others.

SPRING in BIRDLAND

Do You Know on Just What Days to Look for the Arrival of the Robin and the Bluebird? And Do You Know Why Birds Are among the Most Valuable Neighbors You Can Have?

SPRINGTIME out of doors is the busiest, happiest, most exciting time of all the year. Stern old Winter, fussing and blustering right up to the last, has finally packed up his icicles and hurried away, giving place to the joyous reign of spring. The sun shines, soft rain falls, and all Nature's children wake to "light again, life again."

At last the snow and ice have melted away. Once more we hear the merry tinkling of the little rills and streams. Tender green shoots make haste to push their way

up through the damp, dark earth into the air and sunlight. Trees that all winter held up their branches bare and forlorn to the cold gray sky, now unfold their buds, shake out their soft, crumpled leaves, and stand proudly arrayed in the loveliest of new spring dresses.

Up among the tree tops squirrels scamper and chatter in glee. Down below furry little beasties push their noses out of doors, sniff the soft, moist air, and encouraged by the warmth and sunshine, leave the holes and burrows where they have been snugly

SPRING IN BIRDLAND



Photo by Nature Magazine

This speckled guest has come uninvited, for he is not a junco, but a song sparrow. The perky little fellow will be glad to lunch at your feeding tray if it contains

bread crumbs, and will give you endless pleasure. He is the merriest of boarders, and though he sings a great deal, he never talks too much.

tucked up while the ground was covered with snow and the winds blew cold. They start bustling about in right good earnest, getting ready for the busy, happy days to come.

The Happiest of Wild Things

As for the birds, they are the happiest and busiest of all wild things. All up and down the country great is the bustle and excitement. From every thicket and hedgerow the birds' joyous spring songs ring out, gaily growing louder and more thrilling day by day as fresh bands of little winged wanderers come flying in from the south to swell the merry chorus.

"Summer is coming, summer is coming,
I know it, I know it, I know it!
Light again, leaf again, life again, love again,
Yes, my wild little Poet."

The bird population keeps changing every few days with the constant coming and going of flocks of small feathered travelers. Our winter friends who have gathered round

our bird tables, and hopped upon our window ledges to share in the feast we spread for hungry birds when times were hard and food was scarce, now say good-by. With a grateful twitter of thanks and a flick of their pretty wings they are off and away to their nesting grounds further north, where they and their parents and their grandparents before them have always been accustomed to spend the summer months.

Bird Visitors in Summer

But as our winter friends take leave of us, others come flying in to fill their places. Almost every day we may hear a new bird note in the meadows, woods, and orchards, or see a new arrival popping about the trees and hedgerows. Some of these birds have come to stay. They are regular summer visitors who always spend the "sweet of the year" with us. Others just stop to pay a passing call, to rest a while and give us a friendly greeting before speeding on their northward way.

Of course the number and the kinds of birds we see and hear in the springtime de-

SPRING IN BIRDLAND

pend upon what part of America we live in ourselves. For many summer birds in the north are winter birds in the southern states. Others come to us all the way from Mexico, the West Indies, or even from far-off South America; and while some journey northwest, others travel in a northeasterly direction.

How Birds Travel

Many birds who have spent their Christmas holidays in Central or South America are content to stay and bring up their young ones in the southern states. Other hardy little travelers, who may have passed the winter months in the forests of Brazil or the slopes of the Andes, never think of stopping to build their nests until they have reached the northern states or Canada, while some fly right on to Alaska, Hudson Bay, or Labrador. And many of these tiny, long-distance flyers speed 5,000 miles or more through the air in order to reach their own particular summer home; then in the fall, when the nights grow cold, back they all flock to the sunny south again.

So backward and forward, almost as regularly as the swing of a pendulum, these feathered travelers pass over the country twice in the year—in the spring migrating northward, in the fall flying south. They are wonderfully punctual, too. Unless they are delayed by bad weather we may calculate almost to a day when we may expect our bird friends to return from their winter holiday.

And how eagerly we watch for

them. How we welcome the first bluebird of the year, when he comes flying in from the sunny south "carrying the sky on his back." How happy we are to hear the first robin cheerily announcing from the housetop that he and spring have come back again—although the winter snows have hardly yet melted away.

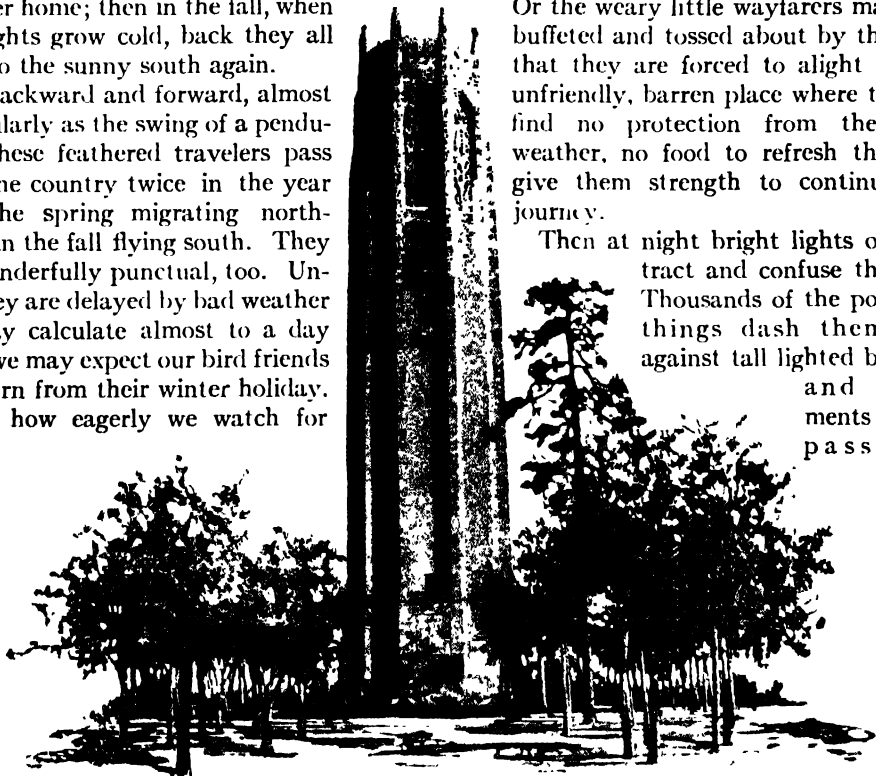
Not only are birds punctual folk but they are faithful little souls as well. Many return year after year to their old haunts, and build their nests on the selfsame spot.

Yet not all the little voyagers who set out so bravely on the long, long trail arrive in safety at their journey's end. Those that travel long distances through the air over hill and dale, forest and plain, and great gleaming stretches of water to the land of their hearts' desire, have many dangers and hardships to face on the way. Sudden storms may arise and drive them far out of their course. They may be blown right out to sea and sink down exhausted into the wild waves.

Or the weary little wayfarers may be so buffeted and tossed about by the winds that they are forced to alight in some unfriendly, barren place where they can find no protection from the rough weather, no food to refresh them and give them strength to continue their journey.

Then at night bright lights often attract and confuse the birds. Thousands of the poor little things dash themselves against tall lighted buildings and monuments as they pass over

The park around the beautiful Bok Carillon in Florida is dedicated to the protection of our feathered friends. Many beautiful birds nest here in the spring, and migrants find it a safe resting place.



SPRING IN BIRDLAND

towns and cities, or against the lamps of lighthouses which shine out in the darkness along the coasts. In England so many birds were killed every year in this tragic way that a kind of lattice work, called a "birdladder" is now fixed below the lanterns of a great many lighthouses. And to this the tired and bewildered birds can cling and rest, instead of beating their little lives out against the glass.

Some birds start off alone, or with just one or two companions on their long spring and autumn flights, but most of them prefer



This goldfinch is bringing his mate some choice seed, so that she will not have to forsake her precious eggs.

are in such a hurry to get to their journey's end that they fly enormous distances before they think of pausing to rest and feed. Some of the little travelers fly by day, some both by day and night, but most of these "migrant (mī'grānt) birds," as they are called, speed on their way through the darkness after the sun has set. And on many a soft spring night we may hear far above our heads the faint, mysterious calls of hundreds and hundreds of tiny winged travelers as



Photos by A. A. Allen and Cornelia Clarke

If you will put cotton, string, and colored yarn in the fork of a tree, birds such as this yellow warbler will use it in their homes.

to travel in flocks, and hundreds, sometimes thousands, of birds make their journey together. When the time for leaving their winter home draws near, the birds grow restless. Swallows, vireos, flycatchers, warblers, shore birds, water birds begin to gather in flocks—each with their own kind—and after a great deal of excited fluttering, twittering, and calling one to another, they rise up into the air and away they all go on their great adventure.

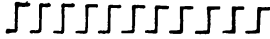
Some birds make the long journey in easy stages, stopping to rest and picnic on the way as often as they feel inclined. Others



The male redwing is black with a beautiful bar of vermilion on each wing. His lady must be content with a coat covered with rather unattractive brown spots.

SPRING IN BIRDLAND

On this page are the songs of a few common birds reproduced in a graphic way. It would be quite simple for you to plot the calls of a variety of birds.



1. The clear whistle of the ovenbird may be heard along any stream in the springtime.



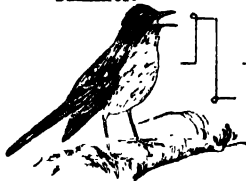
2. The Maryland yellowthroat haunts thickets along the roadside and sings even in the heat of midday.



clear whistle

whispered whistle

3. The white-crowned sparrow makes the woods of Canada merry in the summer.



4. The beautiful evening song of the robin is familiar even to city dwellers.



twit-twit-cheeee-aaah - twit-twit twit twit

5. The song of the cardinal is rarely heard except in the South.



6. You will often see the chipping sparrow mounted on telephone wires singing with all his might.



7. The field sparrow inhabits dry pastures.



8. The loud notes of the yellow-breasted chat are heard more often than the bird is seen.

Each line is a single note; a long line represents a long note, and a short line a short note. Pitch is shown by the position of the lines.



9. The wood pewee is really not so sad as one would believe from his song.



10. Lucky is the wayside traveler who is escorted along the road by the beautiful meadow lark.



11. The chestnut-sided warbler's song may be heard in any hardwood forest in the spring.



12. The towhee pronounces his name so clearly that he needs no introduction.



13. Throughout most of the United States the blackpoll warbler is seen only in migration.



chuck-weeee-oo-chuck-chickeroo-chick

14. The vireo is a small "greenish" bird which frequents the sides of streams.



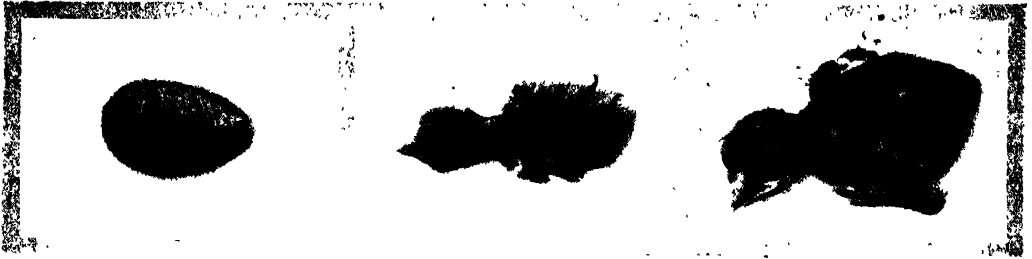
15. The song of the phoebe is much like that of the pewee, but much happier. The phoebe often nests under bridges.



16. Contrary to its name the prairie warbler is common in the eastern states.



SPRING IN BIRDLAND



Here we see the remarkable growth of the English blackbird, which is a cousin of our American robin. When baby birds are born naked and helpless, as in this case, they are called "altricial." Baby chicks on the other hand are covered with down and can run about soon after they leave the egg. They are



called "precocial." In thirteen days this infant grew into the handsome youngster shown at the bottom of the page. His breast is spotted like that of all baby thrushes. Just think of all the worms his rushed parents had to bring to the nest—and remember that there were others at home just like this one!



"—Above in the light
Of the starlit night
Swift birds of passage wing
their flight
Through the dewy atmosphere."

And, as we pause to listen to their voices, we wish the brave little voyagers good luck and a safe journey home.

As soon as they arrive at their desti-



nation the flying parties break up, and the birds all go off on their separate ways, intent on their own affairs.

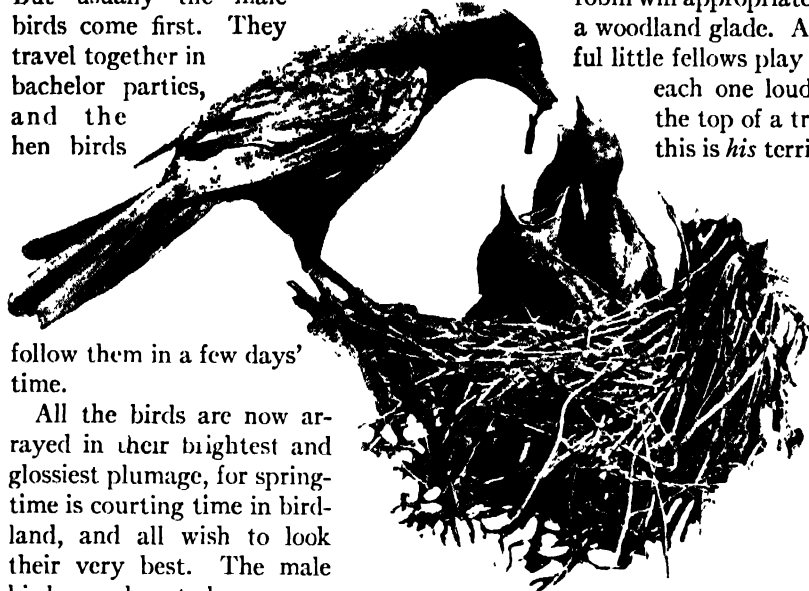
At first they seem to be doing nothing in particular. They chirp and sing, and fly about here and there, eagerly visiting all their old haunts—just as we do when we come back home after a long holiday. And it may be a week or

Photos by John Kearlton

SPRING IN BIRDLAND

two before they stop playing around and settle down in earnest to think about nest building and the serious business of rearing a nurseryful of youngsters.

When the father and mother birds arrive together at their summer home they do not waste much time, as a rule, in playing about. But usually the male birds come first. They travel together in bachelor parties, and the hen birds



follow them in a few days' time.

All the birds are now arrayed in their brightest and glossiest plumage, for spring-time is courting time in birdland, and all wish to look their very best. The male birds are almost always more gaily dressed than their mates. They, too, have the best and loudest voices. And in the merry springtime the songs of love and joy they sing to their admiring little wives are more sweet and thrilling than at any other time of the year.

Why Birds Sing

Early in the morning, and again as the sun sinks to rest, the bird chorus rings out most clearly. But so bubbling over with life and happiness are the sprightly little songsters that, in late spring and early summer days, many of them—wrens, robins, song sparrows, catbirds, and several other familiar little feathered friends—often sing even during the night.

But birds do not sing only because they are happy, or to cheer their mates. Their song is often a song of defiance—a challenge to other birds of the same kind who may hear it, warning one and all to keep their distance. For the bold

singer will brook no rival near his home.

As soon as they arrive at their summer quarters most birds take possession of a certain area, which they look upon as their own particular territory and jealously defend against all comers. A warbler often chooses a tree as the center of his estate. A

robin will appropriate part of the garden or a woodland glade. And there the masterful little fellows play "king of the castle,"

each one loudly announcing from the top of a tree or a gatepost that this is *his* territory and that no one else may set foot on it!

At first there is often a good deal of fighting and squabbling among rival birds of a feather; but when once they have settled their disputes and each bold cock bird has firmly established his claim to his chosen territory, a more peace-

ful state of affairs prevails.

Yet, even so, all the trouble is not over.

While his wife is occupied with her nest building, the owner of the territory is kept busy chasing away every other male bird who dares to trespass on his property. Occasionally, when he has time to spare from his police duties, he may fly off and collect building material for the nest and carry it back in triumph to his mate. The little lady bird, however, does not always care very much for her husband's help. She is most particular about the material she uses for her nursery, and if she does not approve of her partner's contributions, she simply flings the stuff away.

One can imagine the important little nest builder saying, "Now, my dear, *do* leave this to me. I shall get on with the work *so* much better if you don't come worrying round." So the partner of her choice, for the most part, contents himself by keeping a watchful eye upon his home; and when he is not

Photo by A. A. Allen

No wonder our bronzed grackle looks worried. That grub will only serve to whet the appetites of her children. Both parents must work all day at the endless job of feeding.

SPRING IN BIRDLAND

engaged in driving away intruders, he sits on a twig not far away and sings his best and sweetest songs to cheer and encourage his busy little mate.

When the nest is finished and the eggs are laid, the devoted little male bird, still eager to help in every way he can, will sometimes take turn and turn about with his wife in sitting on the eggs. But more often it is the mother bird alone who undertakes this duty, while her thoughtful little partner hovers round and keeps flying up with some nice little titbit for her in his beak. He never leaves her alone for long, and is always at hand to guard the nest when she hops off now and then to feed and stretch her wings.

In due time the eggs hatch. Who then is so proud as the patient parent birds? But what queer-looking objects these little strangers are! There, huddled together at the bottom of the nest, lie four, five, or more helpless wee creatures with never a feather among them to cover their squat, sacklike little bodies. Their round bulging eyes are shut tight, and their big, heavy heads wobble about in the most ridiculous way when the baby birds stretch up their long scraggy necks and open wide their frilly yellow bills.

But the little father and mother are not in the least disturbed by the strange sight. They are perfectly content with their little family. The mother broods over her bare and ugly children, covering them closely with her own warm feathers while the father flies here and there collecting suitable food to fill their gaping beaks.

The young nestlings do not remain long in such an unfinished state. From day to day they improve in appearance. Their

feathers grow, their bright eyes open, and before many days have gone by the tiny birdlings have changed into the prettiest, sweetest baby things to be found the wide world over.

Young birds grow very quickly, and the older they grow, the hungrier they grow.

Their hard-working parents have just as much as they can do to satisfy the hearty appetites of their impatient children, who gulp down all the food the grown birds bring home to them and immediately clamor for more!

From early morn till dewy eve both the old birds are kept hard at it, collecting food and stuffing it down

the throats of the hungry youngsters. Only soft insect food is given to them while they are in the nursery. And their good parents hunt over every tree and shrub on their territory, peeping into every crack and under every leaf to find the soft caterpillars and plump green flies that are hiding there. Few insects

escape the sharp eyes of the eager hunters, and when they have exhausted the home supplies the parent birds forage further afield over land which by common consent is free hunting ground to all the birds in the neighborhood.

The Useful Work of the Birds

The writer once watched a pair of titmice feeding their young ones. For over an hour both the tiny birds flew backward and forward with never a pause to rest, returning, on an average, with a beakful of food to the nest twice in every minute. Just think, if they go on that way from sunrise to sunset how many troublesome insects the birds must destroy in a single day; and what useful work they do in our gardens, orchards, parks, and woodlands.

When "laughing May gives place to leafy

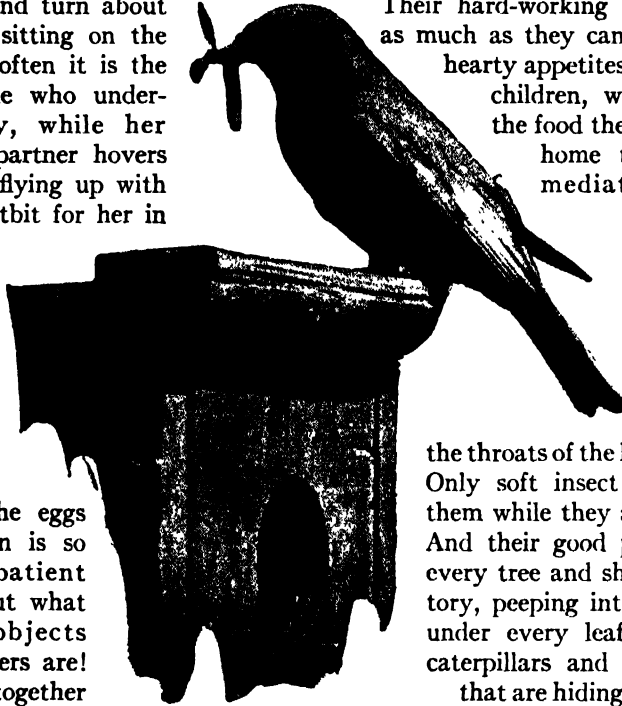


Photo by A. A. Allen

After spending the cold months in the sunny south this bluebird returned to raise her brood in the same bird box she had occupied during the preceding season.

SPRING IN BIRDLAND

June" our earliest bird visitors, as well as our home birds who stay with us all the year round, are nearly all the proud parents of a nestful of fluffy babies. And from every hedgerow and thicket we hear the excited piping and twittering of the tiny things as father and mother come hurrying home from market with something good to eat for their always-hungry children.

Some early broods have already left the nest and are fluttering all about, learning to use their little wings; others sit all in a row on a bough, screaming for their parents to come and feed them.

Some young birds stay with their parents all the summer through. The lazy little things follow the old birds about and expect to be fed long after they are quite well able to look after themselves. Others are more independent and fly away to start life on their own account as soon as they are strong enough to face the world and can use their newly-fledged wings properly.

As a rule, the old birds are not at all anxious to keep their young ones with them longer than is necessary. Indeed, if the children don't go off of their own accord, the parent birds will often drive the youngsters away. And truly, after the long, tiring job of rearing a whole nurseryful of babies all at the same time, the parents must, one would think, need a little leisure time for rest and recreation.

Our Feathered Friends and Helpers

Yet—though you would hardly believe it—instead of taking a well-earned holiday and enjoying in freedom the sunny summer days still to come, most birds, as soon as their first brood has flown away, at once proceed to prepare for a new one. Sometimes

they repair the old nest and make that do for a second brood, but more often they build a new one and start their labors all over again. The mother lays a fresh batch of eggs, and the devoted little couple settle down to the task of raising another family.

We love the birds for their pretty home-like ways, their bright colors, sweet songs, or happy twittering notes. The countryside would lose more than half its charm without our little feathered friends, and a land "where no bird sings" would indeed be a dull and dreary place. But birds are not only charming. They are our friends and helpers, too, and we should be in sad case without their

aid. For if all the birds in our country took wing and flew away for good, there would soon be no country left worth talking about. The grass in the meadows would wither and fade, the fruit in the orchards and the crops in the farmer's field would all be spoiled, trees and plants would be stripped of their leaves. For

in our gardens, orchards, fields, woods, and forests there are countless armies of insects working away, threatening to devour and destroy every green thing that grows; and without our bird friends to help us we should never be able to fight all the ravening hordes.

We do not mean to say that insects are always harmful. Even insects have their part to play in Nature's kingdom, and many of these lowly creatures are really useful to us. But there are nearly half a million different kinds of insects in the world, and they increase and multiply at such an astonishing rate that if their numbers were not kept down in one way or another they would eat up all the growing things on the earth, and the world would become a barren desert.



Photo by A. A. Allen

The meadow larks do the farmer a good deed by destroying insects harmful to his crops. In return the farmer protects these lovely birds. The meadow lark lays her eggs on the ground and makes a roof of grass to protect them from the sun and rain.

SPRING IN BIRDLAND

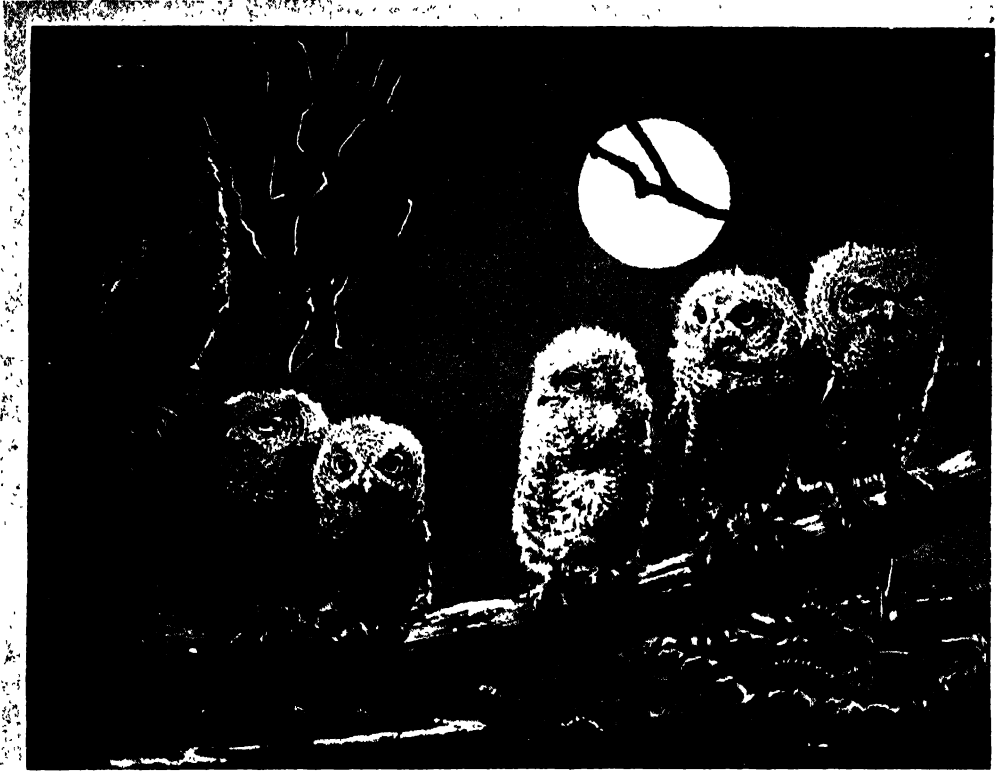


Photo by N. Y. Zoological Society

These baby screech owls are awaiting the return of their mother with a nice juicy mouse. When they

Fortunately this is not likely to happen. Our bird friends come to the rescue and help us to keep the swarming armies of insect foes in check. They clear off the tiresome pests by the thousand. A scarlet tanager has been seen to eat over 600 gipsy-moth caterpillars in less than half an hour; and a little Maryland yellowthroat will pick quite 3,000 plant lice off an infested tree in about the same time.

When a Bird's Work Is Hardest

The birds work hardest in spring and early summer, when nearly every industrious little pair has a nestful of hungry youngsters to provide for. For almost all small birds feed their babies on insect food, even if they prefer a diet of fruit and seed themselves. But seed-eating birds are useful, too, in their way, for they destroy the seeds of large quantities of weeds which would choke the farmer's crops if allowed to grow up un-

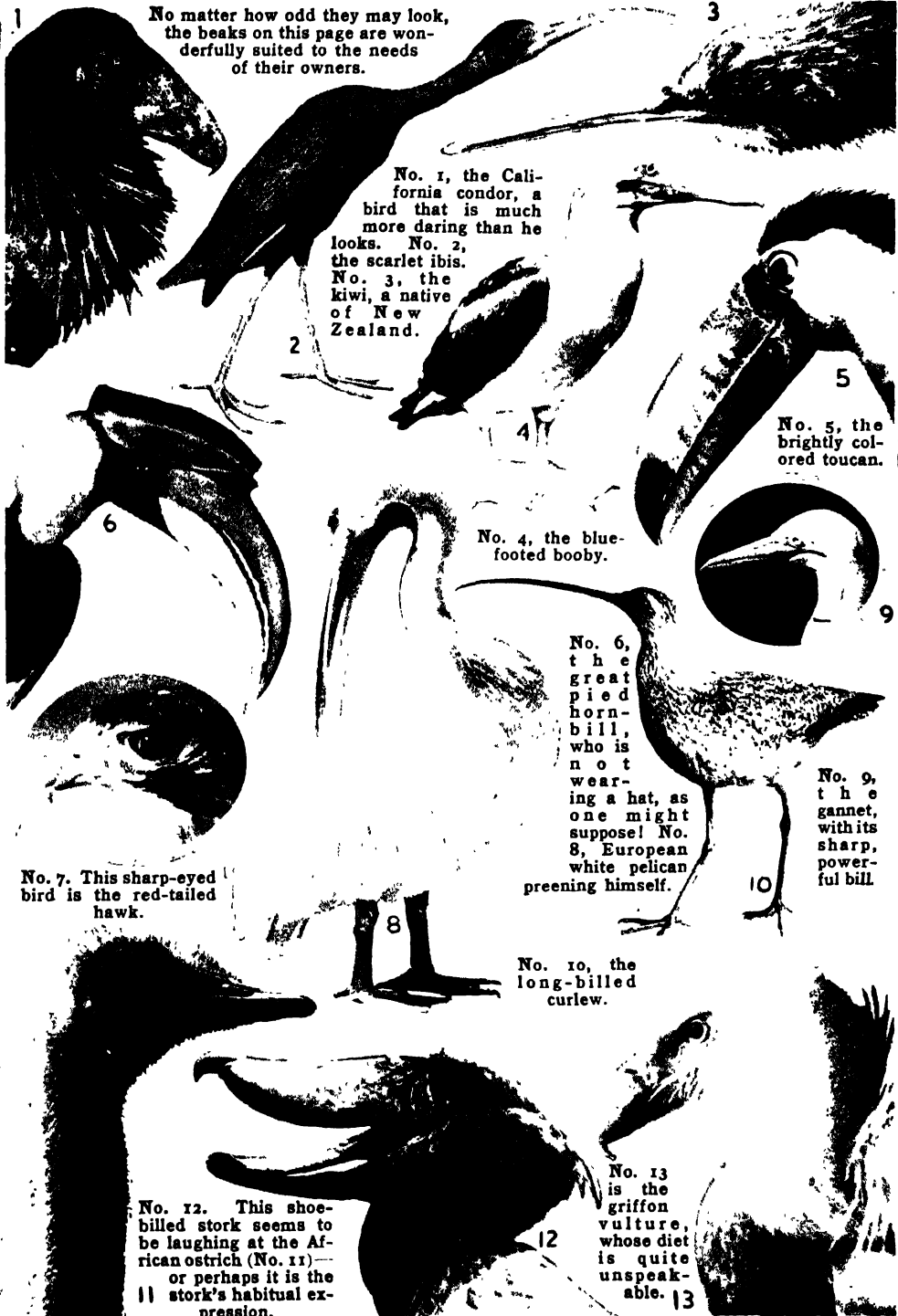
grow up their food will still consist of those pests. Note the large eyes, fitted to see in the dark.

checked. Even the birds of prey, the hawks and the owls, are the farmer's friends, for they swoop down and carry off many troublesome rats and mice who make raids on his stores of grain, gnaw his root crops, and damage orchard trees by gnawing the bark when food is scarce in winter.

Why We Should Protect Birds

Insects, of course, have other enemies besides birds. A great many are killed off by cold wet weather. Many others die from disease; and there are cannibal insects, too, which prey upon others of their own kind. But the birds are our chief allies in fighting insect pests, and in many parts of the United States, and in other civilized countries, people are not allowed to shoot or catch useful wild birds. Yet many beautiful birds are often cruelly killed, and their precious eggs stolen by thoughtless persons. We should all make it our business to pro-

SPRING IN BIRDLAND



Photos by New Zealand Govt., N. Y. Zoological Society, and American Museum of Natural History

SPRING IN BIRDLAND

protect our little feathered friends from harm whenever we can, in return for their valuable service and the pleasure they give us.

We must not forget, in our love for the birds, that some of them certainly are destructive. Birds that live chiefly on fruit and grain often make themselves far too much at and or-

blooded, air-breathing creatures with four limbs. But instead of having four legs like the furry beasts of the earth, or two legs and two arms as we have, birds have two legs and a pair of marvelous feathery wings with which they fly easily and gracefully through the air—in a way that we can never hope to equal with our man-made flying machines.

How Birds Differ from Other Creatures

There is one important way in which birds are distinguished from all other living creatures. Not because they fly! Insects fly; and so do bats. It is not because they lay eggs. For although all birds are hatched from eggs, so are most reptiles and fishes; while there are actually two peculiar four-footed Australian animals who lay eggs and hatch their young ones as any old hen might do.

No, birds differ from all living creatures *because they are*



Above is a baby robin, looking somewhat surprised at the world. Such infants are often seen in June.

The youngster facing you is a chipping sparrow waiting for his parents to bring him some seeds.



The young hairy woodpecker, at the right, has stopped hunting grubs long enough for us to take his picture.

of course protect our crops, but it is cruel to punish the poor things by killing them because they take a share of our fruit or grain when they are hungry.

Wonderful Creatures with Wings

Have you ever thought what really wonderful creatures birds are? They form one of the highest classes of the animal kingdom, ranking next in order to the quadrupeds—or mammals. Like the mammals—which include ourselves—they are warm-

clothed with feathers. Other creatures may lay eggs, others again may fly—on their own wings or in airplanes!—but birds alone are dressed in feathery suits.

These feathers are of three kinds. Next to the skin, soft fluffy feathers called “down” make a cosy under garment to keep out the cold. Over this the “clothing feathers,” which are beautifully arranged to overlap one another, form a splendid, close-fitting

Photos by Cornelia Clarke and Cordelia J. Stanwood

SPRING IN BIRDLAND

coat which rain cannot penetrate. Then, in its wings and tail the bird has a number of long "quill" or "flight feathers" to help it fly and steer itself through the air.

Besides this, the herons, parrots, and a few birds of prey have here and there about them some patches of curious feathers called "powder-down" feathers. These powder-down feathers are constantly breaking up at the tip into a fine waxy powder which covers the birds' clothing feathers and gives them a peculiar "bloom"—rather like the bloom you see on peaches and plums.

As a rule birds have two new suits of feathers every year. Their shabby, worn feathers are moulted in the spring and again in autumn and replaced by new ones; and many birds even change the color of their feathers when they moult, and wear quite different dresses in summer and winter.

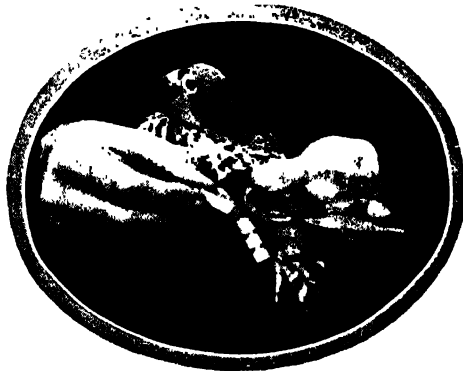
Two other interesting things about our friends the birds are their feet and their beaks. Their feet are covered with small horny scales, and their toes are fitted with claws. Most birds have four toes, and all birds have the kind of feet which suit them best. Perching birds have three long slender toes in front and a short one behind to enable them to grasp twigs and branches easily. All our little song birds are perching birds, and have their toes arranged in this way. Birds that climb about the trees, such as woodpeckers and parrots, have two toes turned forward and two backward, as a rule; this is a more convenient arrangement

for them. Birds of prey have strong, short toes armed with sharp talons for seizing and tearing their prey. Ground birds, such as fowls and turkeys, have thick short toes, with blunt claws for scratching up the ground, while ducks, swans and many other water birds are provided with webs between the toes to help them swim well.

It is the same with the birds' horny beaks. These are always just the right size and shape to suit their owners. For example, birds who feed chiefly on seeds and nuts have stout, strong bills to split the husks or crack the shells. Humming birds and others that sip the nectar from the flowers have long, slender, delicate bills. Birds of prey have strong, hooked beaks; fish eaters, long pointed, daggerlike beaks, to spear the fish swimming in the water. Some bills are straight, some curve downward, others upward, while some are most extraordinary in shape and size. Yet all are useful to the birds in one way or another, as we find when we study the many different ways in which feathered folk work for their living in various parts of the world.

Everything about birds and their ways is full of interest, but most fascinating of all is the home life of many of these beautiful winged creatures. The skillful way in which they build their nests, with only their beaks and claws for tools, fills us with wonder; and their devotion to their little ones, and their tender care for them, is one of the loveliest things in the world.

This pretty little homing pigeon will find his way back home over hundreds of miles of strange territory; and if a message is fastened to his leg, he will bring it safely to the person who welcomes him. That is why "carrier pigeons" can often be of great use to armies in time of war.



The sense of direction familiar to us all in the feats of the homing pigeon is even better developed in our migratory birds. Under the cover of darkness and over uncharted seas and forests many of them travel thousands of miles direct to the spot where they built their nests the year before.

Photo by N. Y. Zoological Society

The STORY of BIRDS

Reading Unit No. 2

OUR CLOSEST FEATHERED FRIENDS

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

How to attract birds, 4-16
The habits of bluebirds, robins

and wrens, 4-15-21

Things to Think About

What must we do in order to attract birds to our homes?
Why is it often hard to locate a bird that is singing near you?
How can male bluebirds be distinguished from the females?
Where do bluebirds nest?
Why do the babies of robins and

bluebirds look much alike?
What common bird lines its nest with mud?
What tragedy used to face robins as they flew south?
Why does Johnny Wren build "dummy nests"?

Picture Hunt

Where do bluebirds build their nests? 4-16
How many eggs does a bluebird lay? 4-16
What reward was given to one

brave robin? 4-18
Are young birds ever fed after they leave the nest? 4-19
What makes baby birds grow fast? 4-21

Leisure-time Activities

PROJECT NO. 1: Photograph bird nests, 4-16, 18, 19, 21
PROJECT NO. 2: Build bird

houses for a wren, a bluebird, and a robin according to the measurements given on page 14-40

Summary Statement

Anyone who studies birds quickly learns to love them. They attract us in many ways—by their bright colors, their cheerful songs, their nesting habits, and by the way in which they rear their young. Our most welcome birds—the robin, bluebird, and

wren—like to associate with us. We can teach them to recognize and trust us by not annoying them. We can set up feeding stations and bird houses so that we can watch them whenever we wish.

OUR CLOSEST FEATHERED FRIENDS

OUR CLOSEST FEATHERED FRIENDS

This Will Make You Still Better Acquainted with Those Well-known Friends in the Tree Tops—the Robin, the Wren, and the Bluebird

HOW many birds did you see or hear when you took your walk to-day? And how many of them did you know? Almost certainly you recognized only a few old favorites, for most birds take pains to keep out of sight. There are the birds of the meadows, the birds of the woods, the birds that flit up and down the leafy roadsides, and others that we are almost sure to find on the marshes or down by the edge of a lake or a stream.

It is a joy to watch them all, to listen to their songs and to find out what we can about their homes and their ways. And the more we become acquainted with them, the fonder we grow of all the small feathery folk who give us such pleasure all through the bright spring and summer days. Best of all we love the friendly little birds who actually seem to like our company and who make themselves at home in our gardens and orchards, or even come and build their nests under the roof of the house or veranda.

We can invite these confiding birds to stay with us in several ways. If we fix up well-made nesting boxes in sheltered places many a little pair that are thinking of setting up housekeeping together, will be tempted to take possession of one of these convenient, rent-free residences—which they will then proceed to furnish in their own way. Unless there happens to be a pond or a running brook near, we should always have a bird bath in

the garden. For birds *must* have water to drink, and they love bathing and splashing about in it.

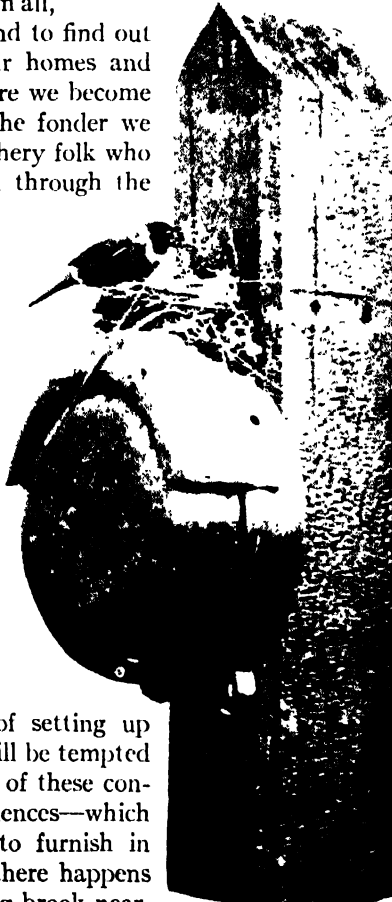
A bird table, too, we must provide for our guests. And we must be careful to keep it well supplied with seeds and nuts, scraps of meat and suet, and crumbs of cake and

bread, so that the birds may be always sure of finding the table set with something they like whenever they are hungry. This, of course, is most important in the winter. But early spring visitors, who arrive when their natural food supplies are still very scanty, will be grateful if we remember their needs and provide some refreshment for them while they are busy house hunting and nest building.

Wild birds are nervous little folk, but they learn to recognize and trust their friends. They will not mind at all if we watch them feeding, provided that we are careful not to startle them. We may even watch them building their nests and feeding their young ones, so long as we keep very still and do not go too near. But on no account must we touch the nest, or push aside leaves or twigs to get a better view of it—even when the small owners are not at home. For if, when they return, the birds find anything disturbed they will be terribly upset, and may even fly off and start another nest in a fresh place where they are less likely to be interfered with.

This robin has perched her home on the bell which warns motorists of approaching trains. The babies will have a noisy environment, but robins are noted for finding strange nesting places.

Photo by Nature Magazine



OUR CLOSEST FEATHERED FRIENDS

Then, too, when the mother bird is sitting we must be extremely careful not to frighten her and so make her desert her eggs; for if she does, there will be no baby birds in the cozy little nursery. We may take a peep at the babies when they are hatched and their parents have gone off for a moment to collect food for them, but never, never must we be tempted to take one from the nest; for baby birds are delicate wee things, and very easily injured.

But if we remember to keep these few simple rules, all will be well. Our bird friends will feel safe and free in our orchards and gardens and will come back and stay with us year after year.

One of the first birds to come home again after the winter holidays is our beloved bluebird. Before the blustering winds of March have ceased to blow, his welcome spring song is heard nearly everywhere in the eastern states. Even on a soft, snowy February day his faint silvery, warbling notes—"ooe-ah-loo-e-e"—may be heard on the air as he comes flying up from the south, or stops to broadcast a greeting to his friends from an apple tree in the orchard or by the road.

But if you run out to welcome him in answer to his call, it will puzzle you to locate your little visitor. For the bluebird is a clever ventriloquist (vēn-trīl'ō-kwīst),

and his soft, quivering notes seem to come now from one place, now from another, until you think there must be half a dozen bluebirds, instead of only one playing hide-and-seek with you in the orchard. Then when you feel like giving up hunting for the bewildering little singer, why! there he is perched on a bough just above your head, where he has been trilling away serenely the whole time.

The male bluebird is usually the first to come home in the spring, but his mate is not long in following him. Then you may watch the happy little pair as they pop about the orchard, inspecting all the likely holes in old tree trunks, decaying stumps, and garden posts. You may easily tell which is which, for the male bird has a brighter blue coat

than his little mate, and his throat and breast are a soft reddish brown fading into white toward his tail. The female bluebird is grayer in color, and her waistcoat is somewhat paler. Her voice, too, though soft and sweet, is

lower and less often heard than her mate's; and when he sings to her his pretty love song—"Dear, dear, dear, think of it, think of it!"

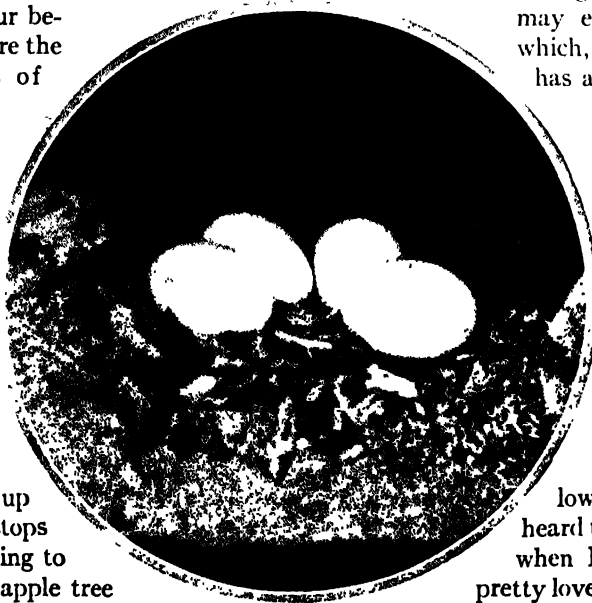
—she answers softly—"ooo-ee-e!"

Although he is friendly and trustful, the bluebird is very shy. He prefers to find his own food, and seldom comes to the bird



Photos by Cornelia Clarke and A. A. Allen

Bluebirds often nest in old stumps or apple trees, as this one has done. Below are the bird's eggs, which are usually light blue. Some bluebirds brave the cold weather and remain north during the entire winter.



OUR CLOSEST FEATHERED FRIENDS

table. But if, while the weather is cold, we scatter dried currants under the tree in the orchard in which he has taken up his summer quarters, he will gladly accept our present, and fly down and help himself to the dainties as soon as our backs are turned.

Bluebirds always make their nests in a hole in a tree, or in a post in some quiet corner. Best of all they love a hollow in an old apple or pear tree, where the foliage is not too thick, for they like to have plenty of light and air round about their little nursery. They are very particular about their nesting site, and if they cannot find one which exactly suits them in the orchard, they may decide to "move in" to a nesting box fixed to the bough of a tree, or on the top of a pole eight or ten feet above the ground—high enough to be safe from prowling cats.

The nest itself is quite a simple affair. The female, with the assistance of her devoted little mate, simply collects some odds and ends of dry grass and stuffs them into her "hole" to make a soft bed for her eggs and babies.

From four to six eggs are now laid in the nest; they may be pure white, but more often they are a pale blue. Then the mother bluebird settles down to hatch them. And while she broods over them so quietly and patiently, her attentive little partner sits on a twig near and sings softly to her over and over again—"Dear, dear, dear. Think of it, think of it!"

But if a cat comes prowling by, or if any-

one approaches too near the nest, the sweet warbling song ceases abruptly and the angry little bluebird flutters round and round his home, scolding loudly—"chut! chut! chut!"—until the enemy has taken his departure.

If all goes well the eggs hatch in about two weeks' time.

But we must not expect to see the wee birds yet awhile, though we can hear their feeble piping within the hole in the old apple tree. For the next week or two the father and mother birds fly backward and forward all the day long. Now they are busily hunting up and down and over and under the boughs of the orchard trees; now one of the pair flies hurriedly home with a beakful of insects—and the piping cries in the nest grow louder as the food is popped first into one gaping yellow beak and then into another.

Day by day the nestlings grow stronger. Then one morning before long when you visit the orchard you will see four or five fluffy heads peeping out of the hole in the tree. The young bluebirds are taking their first look at the smiling world through the cluster of pink and white blossoms growing round about their doorway.

At last comes the most exciting day of all. One after another the eager little birds tumble out of doors, flutter their wings, and cling for dear life to the twigs and sprays of the apple tree—screaming all the time for father and mother to come and take care of them!

The father and mother bluebirds are quite



Photo by A. A. Allen

From the worm in the bluebird's mouth we can be pretty sure that there are four or five ugly little nestlings in this hollow tree. The father is holding the grub until the mother is ready to feed the little ones.

OUR CLOSEST FEATHERED FRIENDS



Photo by Australian Government

You may never see this flame-breasted robin. It lives in far-away Australia. But the little bird is

just as careful with her young as her distant American cousin, and holds her ground in spite of the camera.

as excited as their children. They fly around, encouraging the nervous, awkward little things with soft twittering sounds, and ply the babies with food as fast as it can be collected. They don't have a moment to spare.

Soon the baby birds grow bolder. And, wonder of wonders, they discover that they can fly. Then away they go, flitting from tree to tree, playing follow-my-leader all over the orchard. Their anxious parents fly after them, calling their venturesome babies to order with a warning "Chut! Chut!" whenever the youngsters attempt to fly too far away.

Young bluebirds, you may be surprised to hear, are not much like their parents. Only their wings and their tails are blue; their throats and breasts are thickly spotted with brown. It is not until after their first moult that they really deserve to be called bluebirds. This is because, like the robins, bluebirds belong to the "thrush family"; so although they do not dress like their speckled cousins when they

are grown up, in their baby days they show that they are related to the thrushes by wearing speckled suits.

Some say the bluebirds help themselves too freely to the fruit in the orchard. But

although they may peck a few pears with their sharp beaks or eat a few

cherries, they really do much more good than harm by eating great quantities of annoying insect pests that devour both the fruit and foliage of the trees. In the summer time

bluebirds eat all kinds of in-

sects—beetles and grasshoppers

as well as enormous numbers of

caterpillars. What more natural

than that they should like a little

fruit or a few berries by way of a

change? In late autumn and

winter, when there are very few

insects to be had, they feed

mostly on small wild fruits and berries.

In the fall the bluebirds say good-by to their happy summer home and wing their way southward again. A few fly all the way to Mexico; but most others are content to stay for the winter in the middle and south-



Photo by H. E. Zimmer

This robin has come into a farmer's house and has built a nest on a lamp bracket. As a reward for bravery the window was always left open so that the faithful parents could go in and out.

OUR CLOSEST FEATHERED FRIENDS

ern states. The bluebird that spends Christmas with us in the north is not the same bird that lived in the orchard in the summer time. Our winter visitors probably come to us all the way from Nova Scotia or Manitoba, where they nested and brought up their young ones in the warm summer days

If no bluebird honors our orchard with his presence it is almost certain that a robin will. For the robin is one of our most constant and faithful summer visitors. He actually courts our society, and is sometimes so unwilling to say good-by that when most of his friends and relatives fly away he stays behind for a long time and braves the winter frosts and snow. Even at Christmas time we may hear a robin calling from the thickets and sumac patches where he manages to find protection from the cold and keep life in his little body by eating cedar berries, frozen apples, and sumac bobs till spring comes round again.

Everyone knows and loves "Cock Robin." He is such a sprightly, cheery little fellow, and so smart in his dark, glossy suit, his bright red waistcoat, and the neat black and white striped bib tucked under his chin. Early in the morning he is hopping briskly over the lawn, busily digging up worms and bothersome little "leather jackets" that feed upon the grass roots. For Robin is a wide-awake bird. He does not believe in wasting the best hours of the bright spring and summer days with

his head tucked under his wing. Before the sun is up he is calling "good morning" from his favorite perch on the top of a post or the house roof; and he has had his breakfast and started work while the dew is still sparkling on the grass.

Robin's song is loud and clear and sweet—full of life and energy, like the bright little singer himself. He is a talkative fellow, too; you may hear his "chuck, chuck!" as he calls a warning to his mate, or his loud "ye-ep" when he is startled; and when he is especially excited about one thing or

another he gives voice to a loud, chuckling "laugh"!

You may find the robin's nest in the lower branches of the trees in the orchard, or in the bushes or trees in the garden. He will often build quite close to the house, tak-

ing no notice of people passing in and out so long as they don't worry him with too much attention. I say "him" because Robin likes to have a beak and claw in the building of his nest, although, as is usual in birdland,

it is really the female who does most of the work.

The friendly little pair will often use a nesting box if we provide one for them. But it must always have one side entirely open, for robins believe that light and air are good for children, and they never bring theirs up in a dark hole.

The nest is made of grass blades, weed stalks, and tough, pliable rootlets—all cleverly twisted up together into a neat little basket-shaped cradle. And if the birds



Photo by American Museum of Natural History
Here is a family of American robins posing for us. The father is considering how he will look in the picture; the mother is keeping a watchful eye on the eggs.

Even though this little robin has left the nest the parents will continue to feed him until he is able to forage for himself.

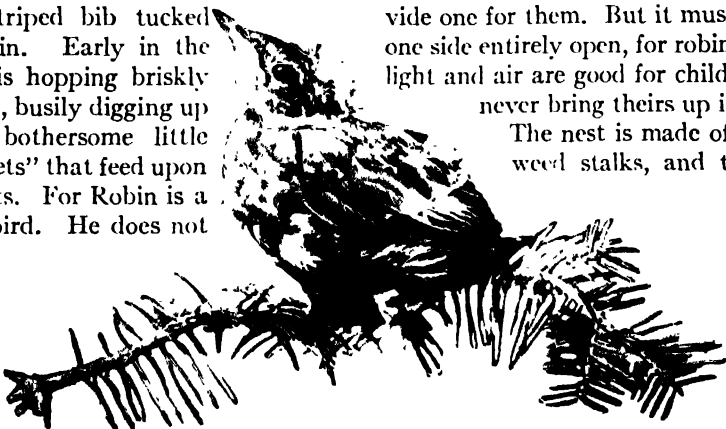


Photo by Corleila J. Stanwood

OUR CLOSEST FEATHERED FRIENDS

find any odd bits of string or strips of paper, they are almost sure to take these and weave them in with all the other fragments.

Two or three days, as a rule, are spent upon the framework of the little nest, and as many as seventy or eighty bits of grass and such material—some quite a foot long—may be worked into it. Then, when they are quite sure that not another stalk is needed, the two busy builders fly off to the nearest pool or puddly piece of ground and there they collect tiny pellets of mud in their beaks and fly back home with them.

They plaster the mud all over the inside of the nest; and when it has dried and hardened, it forms a strong, water-tight clay cup exactly fitting the skillfully made little basket.

But a hard clay cup would scarcely be a comfortable bed for plump baby birds to lie on. So on the top of it the robins spread a smooth, soft mattress of fine dry grasses, which completely cover the mud floor and walls of the nest. Then, at last, their work is done.

In this cozy little nursery the female bird lays three, four, or sometimes five pretty blue eggs; and if no one frightens or disturbs her, before three weeks have passed you may see the fluffy heads of her speckled babies bobbing up over the rim of the nest.

You would hardly believe that anyone *could* be so hard-hearted as to kill a robin. Yet in their winter homes in the south many thousands of these pretty birds were at one time killed every year, and even offered for sale in the markets. In winter large flocks of robins feed on berries, especially the berries of cedar trees, in the southern states;

and parties of men and boys armed with poles and clubs would hunt them at night and knock the poor bewildered birds from the trees in which they were peacefully roosting. Things are better now, since laws have been passed in America to protect poor Cock Robin. Yet many thoughtless people still shoot the little bird, excusing themselves by saying that he spoils the fruit

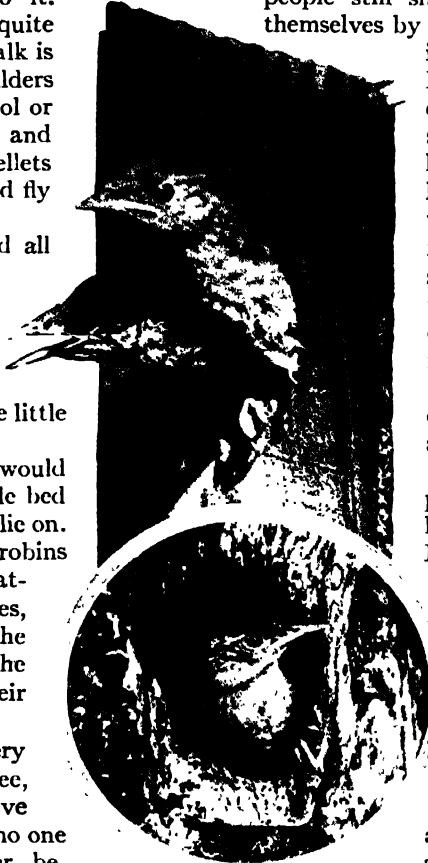
in the orchards and gardens. But if Robin does take a few cherries or grapes occasionally, surely he more than pays for his treat by destroying such large numbers of insect pests, which do more harm to the fruit than he does. It hardly seems possible that anyone who has watched the loving care with which a pair of these friendly little birds bring up their yellow-beaked, bright-eyed babies would ever shoot a robin again.

Almost as fond of our company as the robins are, is the home-loving little house wren. Nothing pleases Johnny and Jenny Wren better than to find a cozy nook for their nest in the shelter of someone's house or of an old farm building. There they will make themselves thoroughly at home so long as their human neighbors are friendly and considerate, and allow them to go about their business without interference.

Johnny Wren is always the first to turn up in his summer quarters. About the middle of April you may expect to see the little chap, and to hear his

loud, ringing song beneath your window as, perched on a twig with his beak pointing to the sky, he trills away at the top of his most surprising voice. How such a volume of sound can come from so small a bird is a marvel!

The wren has no bright colors to attract



Photos by A. A. Allen and Nature Magazine

These birds are fussy little house wrens. Those in the top picture are nearly ready to fly away—this is fortunate, for they have outgrown the nesting box. Below, a mother wren is inspecting a woodpecker's hole.



OUR CLOSEST FEATHERED FRIENDS

our attention, as the robin and the bluebird have. In his feathery suit of soft brown and gray you might almost mistake him for a mouse as he slips quietly in and out under the bushes and piles of brushwood. But although he is soberly clad, Johnny is a smart little fellow. His coat is so neat and tidy, his eyes so bright, and to judge from his jaunty, perky air he seems so well pleased with himself that one can only lose one's heart to the engaging little bird.

Johnny Wren is no idler. He loses no time in playing about when he returns to his summer home. He starts at once to fill up every hole and nesting box in his chosen territory with a jumble of sticks and twigs, in order that when Jenny arrives she she may find several apartments already furnished for her to choose from. But these "dummy nests," as they are called, are seldom finished.

Great is the little bird's excitement when Jenny Wren appears upon the scene. He conducts her round the estate and proudly shows her all the nests he has prepared for her inspection. But Jenny is a fussy little body. As likely as not she won't approve of any of them. Even if she does consent to use one of the nesting boxes he has so carefully prepared for her, she is almost sure to throw out all the sticks and twigs he has taken so much pains to collect! Then when the box is empty she proceeds to fill it up again in her own way.

But Johnny does not mind. Apparently he cheerfully owns that Jenny must know best, and he is quite content to leave the

nursery arrangements to his capable little partner.

Wrens will sometimes make their nests in the oddest of places. An old tin can, a battered pail, or a broken pitcher on a shelf in an outhouse may take their fancy. And then the funny little pair will promptly move in and proceed to fill this queer nursery almost to the top with a heap of twigs and sticks, leaving just enough room for a thick lining of feathers so that Jenny can sit comfortably on the six or eight purplish-brown eggs she lays when her nest is completed.

Jenny's cousin, the Carolina wren, will occasionally condescend to occupy one of our bird boxes, or will build in a hole or cranny in our garden or orchard; but the favorite haunts of this smart little bird are old logs, brush piles, and fallen trees in the woods and thickets. You may know the Carolina wren from the plainly dressed little house wren by his ruddy back and wings, yellowish waistcoat, and the long white stripe over each eye.

The tiny winter wren is a winter visitor south of Canada. He is the smallest member of the wren family, yet, strange to say, he has the loudest, sweetest song of all. We may see this wee brown bird, with his absurdly short turned-up tail, flitting about the brush heaps in the woods around Christmas time; but early in the spring he is off to the Canadian woodlands, where he and his mate will build their neat little nest of grass and leaves lined with feathers, in a hollow stump or a heap of brushwood.

A mother robin never comes home that she does not find several hungry mouths wide open to greet her. She must feel that her task is never done.



Photo by A. A. Allen

To us a slithering worm would hardly seem to be a substantial meal, but these baby birds eat so many such titbits that they grow with amazing speed.

The STORY of BIRDS

Reading Unit No. 3

FEATHERED TENANTS OF YOUR GARDEN

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

Why the chipping sparrow is our friend, 4-23
What bird makes nests lined with horsehair? 4-24
The home life of the chipping sparrow, 4-23-24
Why the house sparrow has been unpopular, 4-24-25
What the automobile did to house

sparrows, 4-25
How the catbird got its name, 4-25
The habits of the orioles, 4-26, 27, 28
Why cedar waxwings are welcome visitors, 4-29
The smallest American bird, 4-30

Things to Think About

Why does the chipping sparrow deserve our protection?
Why is the common house or English sparrow called a nuisance?
What connection was there between the horse and the house

sparrow?
What bird can imitate other birds?
Why do orioles build nests on slender twigs at the end of a branch?

Picture Hunt

Why are catbirds often heard in blackberry bushes? 4-24
Is the bluebird really blue? (Color page opp. p. 4-8)
What type of nest does the oriole build? 4-26

What common bird has a grayish crest on its head? 4-28
What bird nests very late in the season? 4-28-29
What bird deserts his wife as soon as their nest is finished? 4-29

Leisure-time Activities

PROJECT NO. 1: In the winter, when birds no longer use their nests, collect a few nests. Take

them apart carefully to learn what materials are used. Could you make a nest?

Summary Statement

The study of birds and their family life is a delightful interest. We are lucky if they decide to

nest in our gardens, for they destroy the insects that otherwise would eat our flowers.

FEATHERED TENANTS OF YOUR GARDEN



Photo by A. A. Allen

Just think of the courage it takes for this chipping sparrow to feed the babies! Although the little girl has no intention of harming either of them, the mother must be very uneasy with a human being so near. See how she is trying to reach the little ones and at the same time keep as far away as possible!

FEATHERED TENANTS *of* YOUR GARDEN

Do You Do Your Duty by All the Charming Songsters Who Pass the Summer Months in the Orchard or the Garden? And Can You Call Them by Name When You See Them?

AS SOON as the climbing sun brings back the warm spring days, a small host of bright-eyed tenants come flocking back to their summer homes in our orchards and lawns and gardens. And stony-hearted indeed is the person who does not make them welcome. Most confiding of all these "summer boarders" is the gentle little chipping sparrow, who comes hopping right up to the porch to tell us he has arrived, as if he were quite sure of our delight in seeing him. He is right about it, too. For "Chippy" is such a friendly and useful little bird that he is sure of a welcome wherever he goes.

All through the spring and the early summer days you may see Chippy hopping about the lawn and garden paths; and when you run out to play he just flies up in the air and comes down again in front of you a few yards further on. Or, perching on a bush

or the veranda rail, he looks at you inquiringly with his little head on one side, as if to say, "What are you going to do now?" He spends much time in the kitchen garden, too, busy among the currant and gooseberry bushes or the rows of beans and cabbages; he is picking off the caterpillars and cankerworms that eat holes in the tender young leaves. Then, whenever he sees the gardener digging, Chippy is sure to fly up and do his little best to help by hopping about and snapping up the grubs turned up by the spade.

Although he is not so gaily dressed as the robin and the bluebird, Chippy's spring suit of glossy brown with black stripes, worn with a light waistcoat, is neat and attractive; while his smart red cap with its white border gives him quite a perky air. When summer is on the wane Chippy changes his red cap

FEATHERED TENANTS OF YOUR GARDEN

for a brown streaked one. Young chipping sparrows have striped breasts, like most of the sparrow tribe.

Chippy's nest is made of dry grasses with rootlets worked in to strengthen the dainty structure. It is smaller than a robin's nest; and instead of mud, it has a lining of horse-hair—which makes a nice springy bed for the babies to lie on.

You may find this little nest in all sorts of places—on the lower branches of orchard trees, in the thick shrubs and cedar bushes in the garden, in the creeper on the veranda trellis, or tucked away in the clematis vine over the garden porch. But the cunning little builders almost always fix it up where it is just out of your reach; for although the chipping sparrows are very trustful, they won't trust us too far. Besides, they have to think about cats who, sad to say, can never be taught not to harm our small bird friends.

When nesting time is over and the young birds are able to fly and look after themselves, Chippy disappears from our gardens; when we wake in the early morning we miss his cheeery though rather monotonous "chip-chip-chip-chippy-chippy-chippy," round about the house. He and his wife and his family have gone off to the fields, where they fly about in company with parties of juncos and other sparrows of different kinds.

For a week or two they enjoy a care-free, gypsy life, flying here and there and feasting

on the seeds of ripe weeds and grasses. Then, one morning, not one of the little birds we have grown so fond of is to be seen. In the night, while we were sleeping, Chippy and his friends started off on their autumn journey to the southern states, or even to Mexico—where we hope they will all spend a Merry Christmas.

Chippy's cousin the house sparrow, or English sparrow, is not such a general favorite. Everybody knows the bold, assertive little brown bird. It has no love for a quiet country life, and seldom builds its nest in woods or thickets or even in the farmer's fields. Noise, bustle, and excitement attract the house sparrows. So they flock into the towns and cities, where they chatter and quarrel, stop up the gutters and water pipes with rubbish, turn other more peaceful birds out of their nesting boxes, and make themselves a general nuisance! Besides this they

invade the gardens round about the towns, where they nip off the tops of young peas and lettuces, peck the cherries, grapes, and peaches, and bite the petals of the flowers.

The house sparrows are rather bad birds; but they are such independent, happy-go-lucky little beggars that

one cannot help liking them in spite of their troublesome ways.

The house sparrow's nest is nothing to be proud of. It is simply a large, untidy bundle of straw, rags, twigs, leaves, bits of paper, and string, or any kind of rubbish, all jumbled up and stuffed into a waterspout or any hole or chink the birds can find in

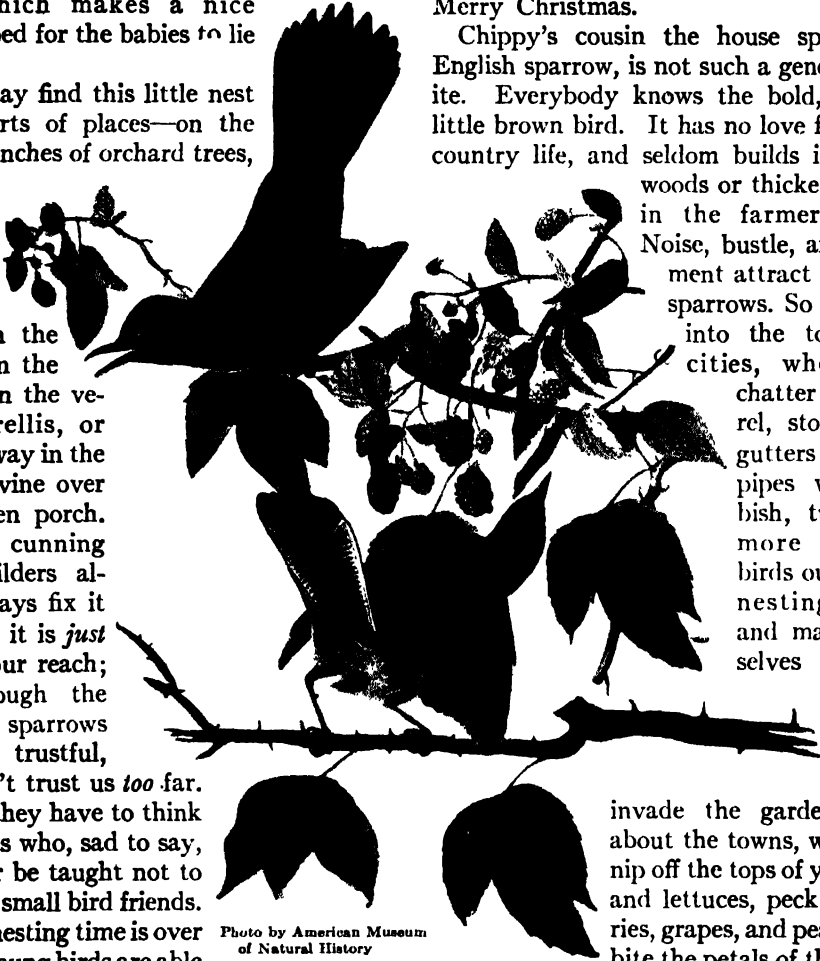


Photo by American Museum of Natural History

These catbirds were painted by John James Audubon, a great American ornithologist who lived during the last century. The birds are eating wild blackberries.



After Paintings Supplied by the National Association of Audubon Societies

This page is a study in red and blue, with the variations Nature makes use of with such skill. 1. A pair of vermilion flycatchers, male and female.

2. Indigo buntings—the female is not indigo at all. 3. Bluebirds—though by no means all blue. 4. The varied thrush, beautifully marked.



After Paintings Supplied by the National Association of Audubon Societies

You need not go to the Tropics to see these handsome birds. You may perhaps find some of them nesting in your own yard. No. 1 is the bronze and purple grackle, in his handsome, richly colored attire. 2. The yellow warbler, a dainty little bird that we often

speak of as the "wild canary." 3. The cardinal, a gorgeous bird of the southern states. 4. The pretty scissor-tailed flycatcher. 5. The scarlet tanager, who is often seen in the northern states. 6. The starling, a European immigrant.

FEATHERED TENANTS OF YOUR GARDEN

the buildings about the town—though when all the available nooks and corners are occupied, late comers will build rough, covered-in nests in the shade trees along the roadways. From four to six white, spotted eggs are laid in the nests. And as each pair of sparrows brings up two or three broods in a season it is small wonder that there are such swarms of these perky brown birds in the land.

Yet although they make themselves so thoroughly at home wherever they happen to be, the house sparrows are not true American birds. They are the descendants of a number of European sparrows that were brought over from England in the middle of the last century; it was thought that they would be useful in destroying insect pests. And it is true that they do clear away a good many caterpillars from the trees in the parks and gardens when they are feeding their young ones in the spring and summer. But by driving away many of our own more useful birds, by gobbling up large quantities of grain and destroying tender young plants, they do more harm than good.

The first English sparrows to arrive from over the sea were set free in New York City. It did not take them long to settle down and feel quite at home in the new country, and they soon began to increase at such a rate that they now have spread themselves over nearly all the United States and Canada. But there are not nearly so many house sparrows in the big towns and cities as there used to be before the automobile had replaced the horse upon the road. In the old days the sparrows grew fat upon the wastage from the horses' food scattered along the highways; but now, instead of oats and hay they find splashes and patches of gasoline—and of course that is of no use to birds!

Birds That Are at Home Everywhere

Many of these saucy little town dwellers have migrated to the country, where they build their bulky nests in holes in the walls

and roofs of farm buildings, and try to appropriate the nesting boxes put up for the wrens and chickadees. And the only way to keep these pushing little foreigners out is to make the entrance holes in the boxes so small that they cannot squeeze through!

Sparrows belong to a very large bird family. There are over fifty different species in North America alone. They make themselves at home in all sorts of places—in the fields, marshes, thickets, hedgerows, and gardens; so we are pretty sure to meet some of them wherever we go.

If we have a quiet shady bit of shrub-

bery in our garden a pair of catbirds is almost sure to come and spend the summer days with us. You will soon know when they have arrived and are beginning to build, for although they do their best to hide the nest in the middle of a thick lilac or syringa bush, the male bird is so nervous and excitable that he is certain to give the secret away. If you pass by the spot where his mate is busy weaving the twigs, plant stems, and rootlets into a compact roomy basket—which later on will hold three or four deep

greenish-blue eggs—out he will fly in a terrible fluster and follow you down the garden path scolding all the way. He won't allow anyone near his territory without a loud, indignant protest. If Mistress Puss curls herself up under the bushes for a comfortable afternoon nap, he flies round and round making such a commotion that at last she goes off in disgust to find a more peaceful spot.

When he is upset or angry the catbird's voice is anything but sweet. He utters loud harsh cries that sound like the mewing of a cat; and it is this that has given him his popular name. But when all is well, his low, bubbling song of contentment is sweet

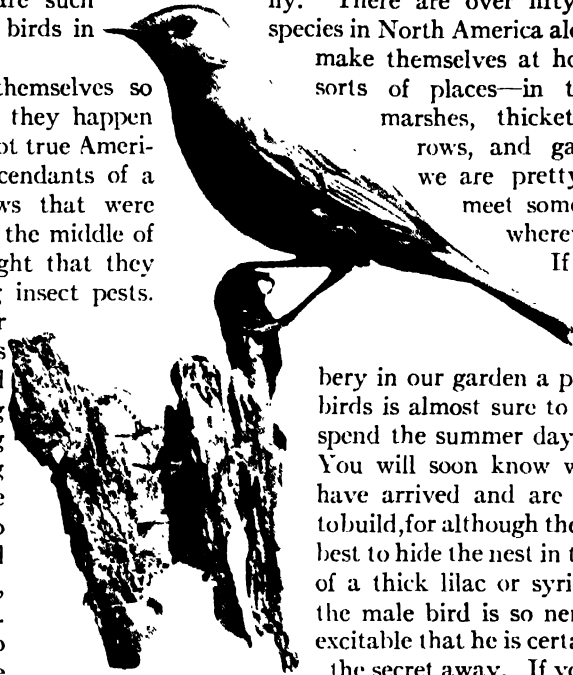


Photo by A. A. Allen

Here is the graceful catbird. Her family, which numbers over sixty species, is found only in the New World. A small number come as far north as the Northern United States.

FEATHERED TENANTS OF YOUR GARDEN

and pleasant, and if you wake up on a warm moonlight night long after everyone has gone to bed, you may still hear him singing as he mounts guard over his home in the lilac bush. The catbird is something of a mimic, too. And, like his cousin the mocking bird of the southern states, he is clever at imitating the calls of other birds.

All the family, father, mother, and young ones, are dressed alike in plain gray suits and black caps; and all have long black tails with some rusty red feathers on the under side which show when the birds are flying about. Although not so gaily clad as some of our summer visitors, catbirds are pretty, neat-looking birds, easily recognized when once you have made their acquaintance.

From the middle of April to early October catbirds are to be found over almost all the country, making themselves at home along the roadside and in thickets and marshland as well as in the garden shrubbery. Their nests, which are tucked away in hedgerows, blackberry bushes, briar patches, or in tangles of wild vine, are rather rough and untidy-looking, although inside they are always softly lined with fine rootlets. Twigs and strips of bark from the vines are the chief material used for the nest, and often with these are mixed dead leaves, bits of rag, and scraps of paper.

Where Catbirds Spend the Winter

In the autumn most of the catbirds fly away south, though a few hardy ones stay behind in the middle states and find shelter in the thickets until spring returns and it is time to nest again.

Birds as a rule sing their loudest and best

in the early hours of the morning. In the hottest hours of the day most of the pretty choristers are silent, and round about noon only a few low trills and lazy chirps are to be heard in the orchard and garden. Then as the sun sinks to rest the birds with one accord burst into song again to bid the world good night.

Yet, perchance, we may be surprised one day in late spring, when the apple blossoms are in bloom, to hear a sweet, ringing melody coming from the orchard when the sun is at his highest in the sky. Who is the little singer? He is so hidden away among the rosy blossoms and tender green leaves that at first we cannot find him. But wait a moment. Ah, there he goes—still singing as he flits from one tree top to another. And as he comes to rest on a bough above our head, and continues to make the orchard ring with

his lively, rippling song, we catch a glimpse of a small, bright bird in chestnut red and black—and we know that the orchard oriole has come back again.

The Neat Cradle of the Oriole

The oriole is not to be found everywhere, like the robins, wrens, and catbirds; but he is well known in the southern and middle states, where he is a regular summer visitor. We must not expect to see or hear him so far north as Washington and St. Louis until April is almost out, and it is no use looking for his nest in the apple trees until the end of May or the beginning of June.

The nest is a very pretty, neat little cradle made of many long strands of fine dry grass, all woven in and out in a marvelous fashion by the little mother bird. You will usually



Photo by American Museum of Natural History

This is the way the Baltimore oriole looked to Audubon. As a scientist he painted his subjects in such a manner as to show all parts of the bird in the same picture. Notice the male perched on the twig.

FEATHERED TENANTS OF YOUR GARDEN

find it half hanging from a bough near the top of the tree, and supported underneath by a few slender twigs.

The Task of a Mother Oriole

The inside of the dainty cradle is lined with the fluffiest thistle heads and seed heads gathered from the weeds growing round about. This makes the most luxurious bed, as soft as an eiderdown quilt for the precious eggs to rest on. Three, four, or five fragile white eggs, sprinkled with lavender spots and scribbled all over with a lot of dark scratches, are laid by the female oriole. Then the gentle little bird settles herself down on the top of them. And if it were not for her bright eyes that watch you anxiously over the rim of the nest as you pass by, you would never know she was there. For an oriole's olive-green and yellow plumage almost exactly matches the tints of the dry grasses of which her little nest is made.

All the baby orioles, as soon as they are feathered, are dressed like mother in green and yellow; but next spring you may see some full-grown green and yellow birds with black throats flitting about in the orchard. These are the young male orioles, not yet arrayed in their full plumage; for not until they are quite a year old are they clothed in black and chestnut red, exactly like their father.

In the states farthest north the cheery little orchard oriole is rather a rare bird. There his place is taken by the Baltimore oriole, a bigger and more brilliant bird who outshines his modest little cousin in every way. Not until all the cold, blustering winds of early spring have departed for good does the Baltimore oriole show himself to his northern friends. Then one day, when the hedges

and meadows are gay with flowers and the orchard trees all decked out in pink and white and palest green, he comes, like a "glance of summer fire," flying from the south. Then you may see the flash of his flame-colored heart among the trees, or hear his eager "Will you? Will you really, truly?" as he calls impatiently for his mate to follow him.

But my lady Baltimore is not to be hurried. She takes her time, and does not join him, as a rule, until several days later.

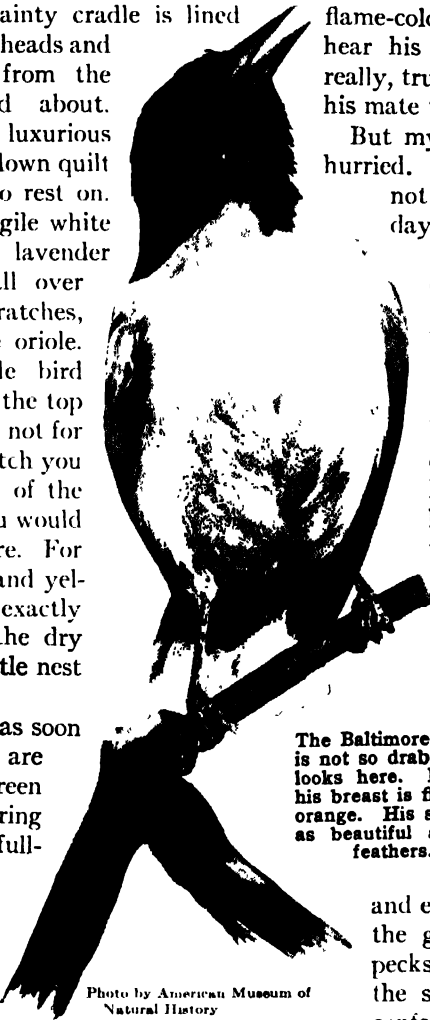
A most beautiful bird is the oriole. His wings, head, and throat, and the upper half of his back are glossy black; his tail is black and gold, and his breast and the lower half of his back a flaming orange. One could almost imagine that he knew quite well what a beauty he is, for he spends a lot of time in the bright summer days dashing boldly about the orchard and "showing off."

As he darts from tree to tree he pecks at the apple blossom, scattering the rosy petals right and left. Later on, he flies to the kitchen garden, splits open the pea pods with his sharp beak,

and eats the young peas; then when the grapes and pears are ripe he pecks holes in the fruit and sucks the sweet juice. Yes, it must be confessed that the Baltimore oriole

is sometimes a rascal. But he does a lot of good, too, by gobbling up caterpillars of all sorts, especially the spiny and hairy fellows which most birds will not touch.

A female Baltimore is not nearly so gaudily clad as her mate; her feathers are mostly brown and gray mottled with black. But she has a soft, orange-colored waistcoat and a few touches of orange on her back and head to brighten her up. She makes a most charming little hanging nest, shaped like a pocket and slung from a forked branch high



The Baltimore oriole is not so drab as he looks here. In life his breast is flaming orange. His song is as beautiful as his feathers.

Photo by American Museum of Natural History

FEATHERED TENANTS OF YOUR GARDEN

up among the tree tops. And there she and her babies swing gently, rocked by the summer breezes, safe from prowling cats and bird-nesting boys.

The little pocket cradle is woven of soft vegetable fibers, such as the inner bark of the milkweed; but horsehair, string, and other odds and ends are often pressed into service as well; and if we hang little bunches of colored worsteds on the trees in the orchards the orioles will probably use some of these too.

The lady oriole does most of the weaving herself, but her handsome partner comes flying up triumphantly to her from time to time with a length of fiber, string, or wool in his beak; and this she accepts condescendingly and skillfully weaves into the nest with the other materials.

The nest nearly always hangs quite near the end of a slender bough, where it swings clear and is seldom overshadowed by foliage; yet it is most difficult to find it, and while the little mother bird is sitting so quietly and patiently on her dark speckled eggs, you may pass beneath her dainty swinging cradle time and time again without ever suspecting that it is there.

But as soon as the young orioles are hatched, they make such a noise that they attract the attention of one and all to their airy nursery in the tree top. Never were there such noisy babies! They scream for food at the top of their shrill little voices from morning till night, while their hard-worked parents fly hurriedly backward and forward doing their best to satisfy their pocketful of impatient children!

The oriole's visit in the northern states is a very brief one. He comes late, stops just long enough to raise his little family, and then, before a leaf has fallen from the trees, away he flies to his southern home again. He is sometimes called the "golden robin," the "firebird," or the "hang-nest"; but his proper name "oriole" comes from a Latin word which means "golden" or "gilded."

Though not so gorgeously arrayed as the oriole, the waxwing is one of the prettiest of our home birds. It is very dainty and elegant in its silky brown suit with soft tints of primrose yellow, fawn, and pale gray-blue. It has a golden tip to its tail and a velvety black throat, and on the tip of its wing feathers some bright red spots which look just like red wax. On its head, too, is a feathery crest

which the little waxwing raises when it is excited or surprised, and presses flat against its head when it is frightened.

The male and female waxwings dress just alike. They both take part in nest building, and even take turn and turn about in sitting on their pale blue eggs, which are marked with a number of dark round spots. The nest, which is made of weed stalks, grasses, and rootlets, may be found in June or July

fixed firmly among the branches of an old apple tree. It may be small and compact and neatly lined with fine grasses, hair, wool, or feathers; or it may be rather a large and bulky affair for the size of the little builder, who is not quite so big as a robin. Clearly, waxwings do not all think alike about nest building; and they will often work bits of paper, string, rags, or wool into their nests,

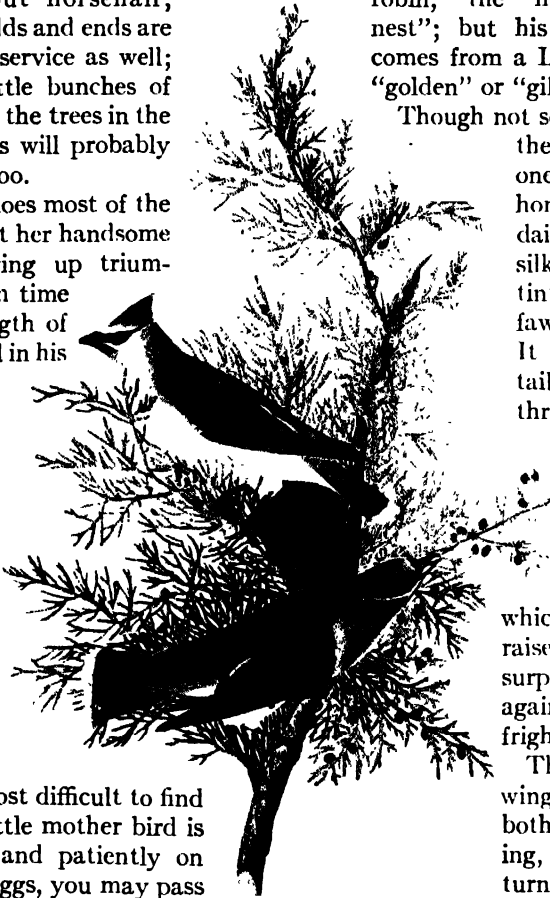


Photo by American Museum of Natural History

These cedar waxwings are from Audubon's great book on the birds of America. They are shown here eating cedar berries. These birds nest very late in the season.

FEATHERED TENANTS OF YOUR GARDEN



Photo by American Museum of Natural History

This young cedar waxwing seems a good deal annoyed. You can't blame him; either, for his parents were so

late nesting that here it is August before he can leave home. All the neighborhood youngsters have gone.

or anything else that is handy and happens to take their fancy. Now and then you may even find one decorated with a few tufts of moss.

Waxwings are sociable little birds, and when the nesting season is over they fly about the country in large flocks. It is a pretty sight to see them all wheeling and turning together in the air, as if they were giving an exhibition of fancy flying. When tired of these aerial maneuvers the whole company will flutter down and settle on a tree; there, sitting side by side along the boughs, they snuggle up together in a most affectionate way. Waxwings have no real song, but they call to one another with soft lisping notes that are very sweet to hear, and as they sit all in a row, preening one another's silky feathers, they whisper and twitter all the time as if they were talking secrets.

These charming little birds eat all sorts of

berries, and wild fruits; and when the cherries are ripe in the orchards they simply cannot resist the tempting red fruit. So in some parts of the country they are called cherry birds.

But the waxwings are so helpful in destroying large quantities of troublesome looper caterpillars—which ruin whole crops by stripping the leaves from the fruit trees—that we can hardly grudge them a cherry or two in payment for their services. They wage war, too, on potato beetles and elm-leaf beetles. So a flock of cedar waxwings is a welcome sight in the springtime in our orchards, gardens, groves, and pasture lands.

In the winter the waxwings do not disappear altogether from the northern states, as so many birds do. Friendly little flocks may still be seen flying from place to place in the coldest weather, searching for winter berries. Indeed, these delicate little birds do not seem to mind the cold. You may sometimes see



Photo by A. S. Rea of Natural History

The ruby-throated hummingbird is always deserted by her husband soon after the home is built. To her will fall all the trouble of caring for herself, the eggs, and even the young.

FEATHERED TENANTS OF YOUR GARDEN

them fluttering about in a snowstorm, trying to catch the feathery flakes as they fall.

Many other birds besides our regular visitors will now and then build their nests in the orchard and garden—just as our special bird friends will choose woods, thickets, and hedgerows for their summer homes when they have a mind to. But of all the birds that come and go, none gives us such a thrill of delight as the wee ruby-throated humming bird, when like a “glittering fragment of the rainbow” he suddenly flashes across the garden, his dazzling tints of green and purple, crimson and blue gleaming in the sunshine.

How Ruby-throat Resembles a Butterfly

So small is this tiny jewel of a bird that you might almost mistake him for a butterfly as he darts swiftly from flower to flower, for he flutters his wings as he flies very much as a moth or a butterfly does. Such a restless, wee thing he is, too. Now he is buzzing among the flowers like a tiny bumblebee. Now, with wings vibrating so rapidly that they appear only as a misty blur to our eyes, he hovers over a trumpet-shaped blossom thrusting his needlelike beak deep down into the long tube to reach the honey drop hidden within it. Now, suddenly, he darts aloft, and away he goes over the tree tops and is lost in the blue of the summer sky.

Little ruby-throat is the smallest of all North American birds. He is the only humming bird that adventures so far north as the Northeastern United States. But he has many rainbow-tinted relatives flitting among the tropical flowers in Central and South America. There he himself will join them when the summer flowers are fading.

For humming birds cannot live where there are no flowers. They feed upon honey and the tiny insects that swarm about the blossoms. Although they do not sing, humming birds are not entirely silent, and Sir Ruby may sometimes be heard chipping away at a great rate as he swings in the arc of a circle above his demure sweetheart. The humming noise the little birds make as they fly, comes, of course, from the rapid vibration of their wings.

We are genuinely excited when one of these “living jewels” pays a flying visit to our flower beds or to the honeysuckle growing round the windowpanes. But most thrilling of all it is when a pair of ruby-throats decide to stay with us and build their tiny nest in our garden. Such a pretty, delicate little cradle it is—fit for a fairy to sleep in! Though hardly bigger than a walnut, the humming bird’s nest is beautifully made of fern wool and the cotton down from seeding plants, skillfully woven into a soft, silky, felt-like material. The edge of the nest is left loose and fluffy, and on the outside the tiny affair is shingled with moss and small fragments of lichens, with maybe a few scales from the bark of the spruce added as a finishing touch.

Where Humming Birds Build Their Nests

Humming birds are not very particular about the position of their nest. It may be placed on a fairly low branch or high up almost out of sight in the tree tops. But whether it is high or low, the nest is always fixed firmly to a slender bough, set astride like a saddle on a horse. So, when the wind blows, there is no fear that “down will come babies and cradle and all!”

If you see a tiny bird hovering over the flowers in your garden, you may know him to be the dainty humming bird.



Photo by A. A. Allen

As he sips the flowers' nectar, the little bird's wings vibrate so fast that one can scarcely see them.

The STORY of BIRDS

Reading Unit No. 4

DARTING SWALLOWS AND GRACEFUL SWIFTS

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

How swallows drink and eat while flying, 4-33
Why swallows are considered our friends, 4-33
How swallows make their nests, 4-34

How to recognize swallows and swifts, 4-33-39
How parent swallows and martins train their young, 4-34-35
What birds' nest soup really is, 4-39

Things to Think About

Why are swallows called real "home birds"?
How do swallows pay their rent to the farmers?
What keeps the mud nest of a swallow from crumbling?
What birds live in "apartment" houses?

What bird takes a bath while flying?
Where do swallows go in the winter?
Why are swifts unable to perch on wires or twigs?
Where do chimney swifts go in the winter?

Picture Hunt

What birds are usually found in barns? 4-33
What birds usually rest in large numbers on telegraph wires in the fall? 4-34
What birds often have to be chased away by purple martins? 4-35

Why must young swallows learn to catch insects dropped by the mother bird? 4-36
How are the nests of cliff swallows entered? 4-37
Why are chimney swifts able to cling to walls? 4-32

Leisure-time Activities

PROJECT NO. 1: Visit a barn and study the home life of barn

swallows, 4-33-34

Summary Statement

Among our most graceful birds are the swifts and swallows. They are valuable bird friends because they destroy insect pests

in enormous numbers. Baby swifts and swallows go through an intensive training in food catching to prepare them for later life.

DARTING SWALLOWS AND GRACEFUL SWIFTS



Photo by American Museum of Natural History

These chimney swifts must be surprised at having their home open to the daylight. Their frail nests are well glued to the wall—or at least we hope so! The

tail feathers of the parents have stiff points. As you may easily see from the picture, these points are very useful when it comes to clinging to a wall.

DARTING SWALLOWS *and* GRACEFUL SWIFTS

Whether They Make Their Homes in Our Chimneys, around Our Barns, or in the Side of a Cliff, the Members of the Swallow Tribe Are Always Swift and Graceful on the Wing

MANY of our regular bird visitors are in such a hurry to return to their summer home that they cannot wait until spring has won the day and fairly driven old winter out of the land. So the poor little travelers often receive a very cold welcome. They are greeted by cold gray skies, bitter winds, and whirling snows instead of by the bright sunshine and soft breezes they hoped to find awaiting them.

But the swallows are wiser. Not until Jack Frost has packed up the last of his icicles and vanished for good and all must we expect to see them, and hear their soft, twittering cries as they wheel and twist and turn in their marvelous flight above our heads. Then at last we can truly say, "Spring is here, for the swallows have come back again!"

Swallows are real "home birds." They like to live near us and fix their nests under the shelter of our house roofs, though they never grow familiar with us as robins and chipping sparrows do. The barn swallows love to spend the summer on a farm; and if there are plenty of roomy, old-fashioned barns, in and out of which they can fly as they please, they will return year after year and build their nests among the rafters. Put their cousins the cliff swallows prefer to make their homes outside under the eaves of the buildings.

Barn swallows and cliff

swallows are very much alike, and they seem to agree very well together. Mixed companies of these friendly birds may often be seen sunning themselves on the sloping roofs of the farm buildings, or hawking backward and forward over the ponds and meadows in their ceaseless search for food.

Swallows spend almost all their time on the wing. They can drink without pausing in their flight as they skim over the surface of the water, and they feed on flying insects as they sweep to and fro through the air. Large quantities of small moths, butterflies, and beetles are eagerly snapped up by the swallows, as well as swarms of gnats, mosquitoes, flies, and winged ants; so the birds

do most valuable work for the farmer in destroying these troublesome pests, and repay him well for their summer lodgings in the barn.

Although they are so strong and swift on the wing, swallows have very small and delicate feet, and they are not at all at their ease on the ground or among the heavy boughs of leafy trees. They cannot run or hop in the usual birdlike way, and when they rest they are obliged to choose a very slender perch, such as a telegraph or telephone wire—where you may often see them sitting and twittering all in a row.

All swallows are beautiful, graceful birds, but our friend the barn swallow is certainly one of the handsomest of

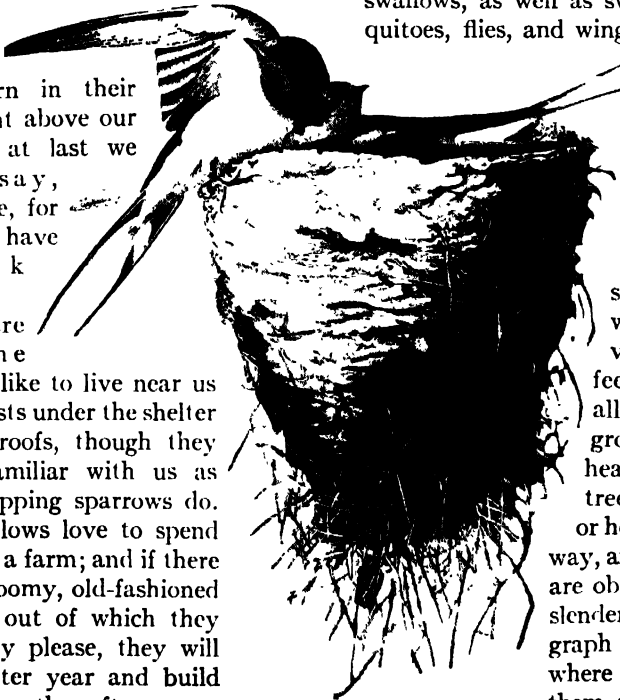


Photo by American Museum of Natural History

Nearly every suitable building in the range of these graceful barn swallows contains a colony of them. As shown here, their nests are made of grass and mud. This particular family was painted by John James Audubon.

DARTING SWALLOWS AND GRACEFUL SWIFTS

them all. His back and his long tapering wings are a dark, steely blue; his breast, a deep buff color; his throat, ruddy red; and his long, forked tail is marked with a row of white spots.

The cliff swallow, too, has steely blue feathers on his wings and the upper part of his back; but the lower half of his back, as well as his breast, is pale buff, his throat is a chestnut color, and he is distinguished by having a whitish spot on his forehead. Moreover, the cliff swallow is not quite so big as his cousin of the barn, and his tail is neither so long nor so deeply forked.

Soon after the swallows come home they set to work to prepare their nurseries. They use mud as their building material, and mix it with wisps of straw or grass to bind it firmly and prevent the walls of the nest from crumbling away. Inside there is always a thick, warm feather bed for the baby birds to lie on.

It is hard work making a nest like this, especially if the weather happens to be dry and there are no puddles about. For in that case the birds may have to fly a long way to fetch the mud, and make hundreds of journeys backward and forward to the nearest pond or stream before they have collected enough to complete their task. The mud, when it has dried, sets quite hard, like clay, and the barn swallows' nest looks like half a saucer stuck on a beam or rafter up in the roof of the old barn.

A Pair of Birds Who Lived in a Schoolroom

Barn swallows will sometimes build in lofts, or in an attic under the roof of an old house, if there are any cracks or broken windowpanes through which they can fly in and out. The author even knew a friendly little pair who fixed up their nest in the

corner of a schoolroom. The windows were always left open for them, and all the morning, while the children were learning their lessons, the swallows flew in and out, bringing tiny pellets of mud in their beaks. These the birds plastered on the wall just under the ceiling. The nest was finished, the eggs were laid, and the baby swallows were hatched and brought up by their parents in the schoolroom. And while the children were repeating their lessons the wee birds twittered away as if they were trying to learn lessons too!

Of course the swallows—like all young birds—do have lessons to learn. They are taught by their parents to fly and to catch food for themselves. They must exercise their wings

in order to grow strong, so that they may be ready, when the time comes, to fly away with the older birds to their holiday home in the warm south. And they must practice steadily day by day until they can twist and turn

and dart through the air, and snap up the dancing gnats and fluttering moths without pausing in their flight—just as their parents do.

Cliff swallows never build inside a room, but they will fix their nest under the eaves of a house. There we may hear the happy twittering of the birds all through the summer days, may watch the devoted parents feeding their little ones and, later on, giving the young swallows their first flying lessons.

The cliff swallow's nest is not an open saucer, like the barn swallow's. It is closed in at the top and looks like a rough ball of clay with a hole in the side for a doorway.

In wild, uninhabited parts of the country, where there are no houses or farm buildings, both barn and cliff swallows build their nests among rocks and broken crags. The barn swallow chooses a cave or a deep crevice,

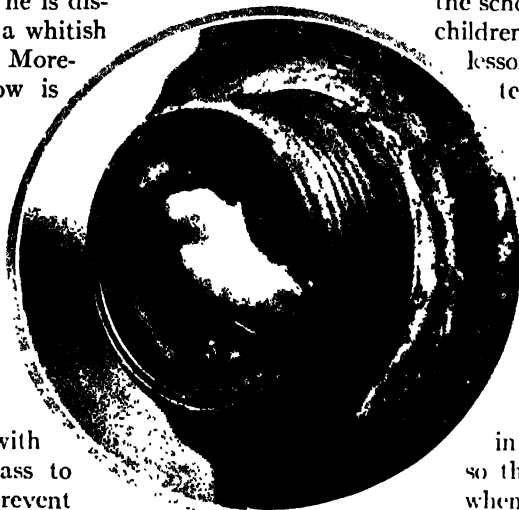


Photo by American Museum of Natural History

Luckily for this tree swallow the fire hydrant she is using for her home is no longer in use. In the fall large flocks of migrating swallows are often seen resting on telephone wires.

DARTING SWALLOWS AND GRACEFUL SWIFTS

while the cliff swallow fastens its covered nest to the face of a cliff.

The purple martin is another welcome summer visitor in almost all parts of temperate North America. He is a handsome fellow, dressed in a complete suit of glossy blue-black feathers. Although he is not a big bird—not quite eight inches from beak to tail—his wide-spreading wings make him appear much larger than he really is. The female is grayish brown, with some steely-blue feathers on the back and head, and a light waist-coat.

Martins are cheerful, friendly birds, and, like their cousins the barn swallows, seem to like our company. If nesting boxes or gourds suspended on crossbars at the top of a pole are prepared for them, they may often be persuaded to move in. Many people put up most elaborate "martin houses" containing many separate apartments; and if this mansion pleases the birds, several couples will set up housekeeping there and the summer days will be filled with the sound of their cheerful chattering and musical warbling. For the purple martin is the "star performer" of the swallow family, and has a really delightful little gurgling song of his own.

But the martin is a bird of uncertain moods. For no reason whatever, so far as one can see, he may disapprove of the splendid residence especially erected for his benefit, and it may stand empty and "to let" all the summer—or be taken possession of by a

mob of chattering English sparrows. Even when a martin's house is occupied by its rightful tenants, the impudent sparrows often try to turn them out. But the martins do not submit quietly to such treatment. They boldly defend their home, and many a battle in the air may be fought before the invaders are finally driven away.

The martins furnish their house by carrying in a supply of feathers, straw, and small twigs, to make it cozy and comfortable for their little family. The young martins are "just like mother" in feathery suits of brown and gray, with touches of dark blue here and there. They twitter and squeak through the live-long day, as they cluster in a bunch on the doorstep or roof of their house. They soon learn to fly out to meet father and mother when the parent birds come flying

home with a beakful of insects; then they take the food from their parents while fluttering in mid-air.

The Graceful Purple Martins

Although in their flight the purple martins are not quite so beautiful as the barn swallows, they are very graceful and expert on the wing. They hunt mosquitoes in the air, as well as large quantities of other dangerous or troublesome flying insects; and they can drink while lightly skimming over the surface of lake or river. They love to dip right into the water and then dart up into the air, shaking the drops from their feathers just as a dog shakes himself after a bath.



by A. A. Allen

These purple martins are more than a match for the English sparrow, which is seen in the lower right-hand corner. The martins want no such undesirable tenants in their apartment house. Many years ago these birds nested in trees, but with the coming of civilization they accepted the abodes offered by man.

DARTING SWALLOWS AND GRACEFUL SWIFTS

The tree swallow is another member of the swallow tribe who will sometimes accept the offer of a nesting box or a dried gourd fastened to a pole, although naturally it makes its nest of grass and feathers in a hole in a tree.

How to Know a Tree Swallow

First to come and last to go of all the swallows is this dainty little bird. He is smaller than the barn swallow, and you may know him by his snowy breast and dark glossy coat glistening with metallic tints of steel blue. His tail is bluntly forked, and his wings, on which he soars aloft or sweeps low over the marshy meadows, are long, narrow, and pointed in the usual swallow fashion.

Two broods are raised, as a rule, in the nest in the hollow tree. Then, as soon as the second one is ready to fly, away go the swallows, parents and children, sweeping over the countryside. They skim over lakes, rivers, and ponds, circle over meadows and pastures, snapping up mosquitoes and every six-legged creature that flies, and have a thoroughly good time. Toward sunset hundreds of tree swallows may sometimes be seen swirling round

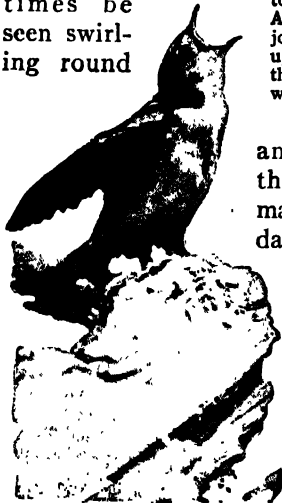


Photo by A. A. Allen

You can see what valuable training this young tree swallow is receiving in the art of insect catching. His mother is going to drop the food to him. At a later date he will join a huge flock made up of other members of the swallow family, and will finally fly away south with them.

and round high in the sky above the marshes. Then, as the daylight fails, down they drop among the reeds, to which they cling with their slender feet until the dawn.

When the summer days are drawing to a close — large flocks of

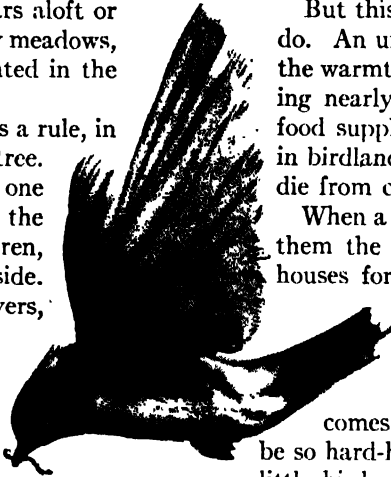
swallows of all kinds gather on the rooftops and all along the telegraph wires, chattering, twittering, flying excitedly backward and forward, all getting ready to set out on their long journey to the south. By the end of August nearly all the birds have gone. But the tree swallows are not in quite such a hurry to start as the rest; they have not so far to go. For although most of them fly all the way to Central America, a good many tree swallows end their journey when they reach the Southern United States, where frost and snow rarely come. There they spend the winter.

But this is not always a wise thing to do. An unusually cold season may chill the warmth-loving swallows, and by killing nearly all the insects, cut off their food supplies. Then there is a tragedy in birdland. Hundreds of swallows may die from cold or starvation.

When a sudden cold wave overwhelms them the birds will sometimes fly into houses for warmth and comfort. And there they will stay, cuddling up together on cornices and window sills until the wintry weather is over and the sun comes out again. For no one could be so hard-hearted as to turn the trustful little birds out of doors in the cold! At such times the swallows are quite fearless. They seem to realize that they are welcome, and occasionally some of the birds will even rest confidently on the hands of their human friends.

The Dangers of the Long Trip

The barn and cliff swallows and the purple martins, which fly all the way to tropical South America, sometimes as far as Brazil, have many dangers to face before they reach the land of perpetual summer. They must cross wide rivers and great wild tracts of country where insect food is scarce; and they may encounter violent storms of wind and rain which beat them down and sweep them out of their course. But the European swallows, many of whom spend the summer in England, have to take an even more perilous journey. To reach their winter home in South Africa the birds are obliged to cross



DARTING SWALLOWS AND GRACEFUL SWIFTS



Photo by American Museum of Natural History

This is the way cliff swallows plastered their nests to rocks before they started building under eaves of houses. Notice how the funnel-shaped entrance of the nest is bent downward. Over a hundred different

kinds of swallows are found throughout the world. Only a small proportion of the total number live in the United States, but the abundance of individuals makes up for the scarcity of species.

DARTING SWALLOWS AND GRACEFUL SWIFTS

the open sea. Many a time in stormy weather flocks of weary little winged travelers have descended from the sky to rest for a while on the decks and rigging of a big ship in mid ocean. Then when the storm has passed and the birds have recovered somewhat from their exhaustion, the brave little things, with a chorus of grateful twittering, rise all together into the air again and speed on to their goal across the sea.

True Children of the Air

The swifts, like the swallows, are true children of the air. From sunrise to sunset they spend almost all their time on the wing, now sweeping low over the ground in pursuit of insect prey, now soaring higher and higher until they are lost to sight in the clouds.

Swifts are not swallows, although they are like swallows in many ways. They are graceful birds with long, narrow wings, and are dressed in neat feathery suits of dull, sooty brown.

Their waistcoats are somewhat paler in color, and their throats a grayish white. Really, though one would never guess it from their appearance, the dark, mysterious swifts are more nearly related to the brilliant little humming birds. They never perch on wires or slender

twigs, as the swallows do. Indeed, swifts cannot perch, since their feet are very weak and all their four toes are turned forward in the same di-

rection. So at night, when they sleep, and in the daytime when they are not on the wing, the birds cling to a wall or the steep side of a cliff with their claws and with the short stiff spines on the tip of each tail feather.

On late summer evenings we may sometimes see hundreds of swifts wheeling and circling together in the air overhead. What a noise they make! All "chip-chip-chip-chipper-chipper-chipping!" at the top of their shrill voices as they join in a friendly good-night chorus. Then suddenly, as the twilight darkens, after a final swirl in the air the birds make a swift downward dive—first one, then two, then half a dozen or more together—and put themselves to bed in some old building or, best of all, down the shaft of a disused chimney. There, all huddled together, the swifts pass the night clinging to the sooty walls of their curious bedroom.

A chimney bedroom suits these strange birds better than any other place to sleep in; and that is why they are usually called chimney swifts.

It is only toward the end of the summer, just before they fly away to their winter homes, that the swifts flock together in such large

numbers. Earlier in the season they are all busy with their private affairs and have not much time for company.

They always build their nests in a chimney, if

These are not insects, but cliff swallows who are not quite up to date and still build their nests in the old-fashioned way. Their rock is in the arid West, so they have little fear of rain.

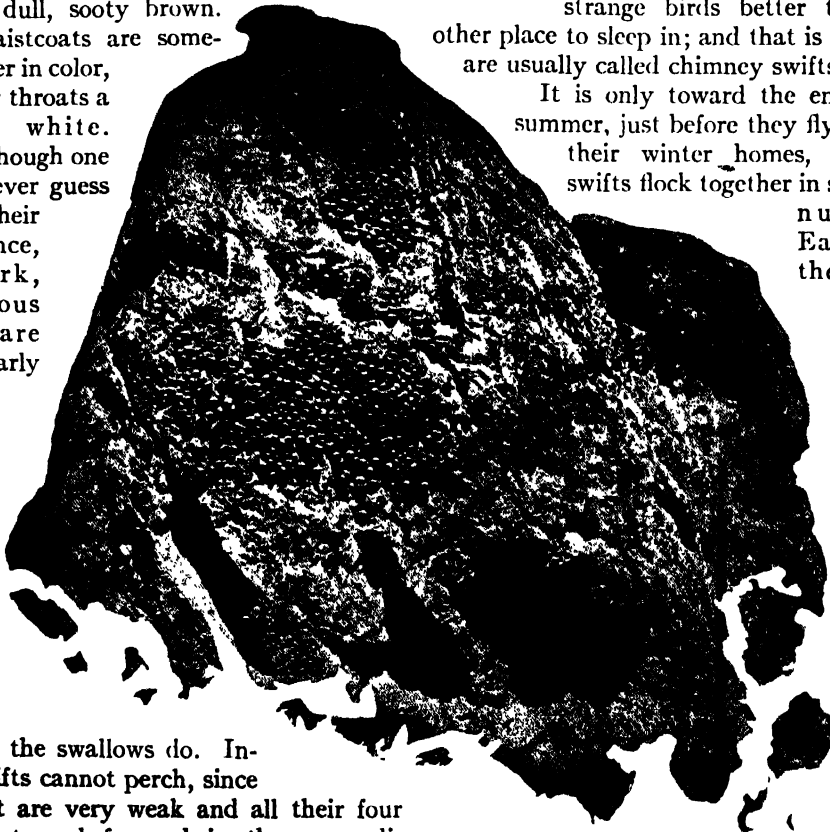


Photo by Nature Magazine

DARTING SWALLOWS AND GRACEFUL SWIFTS

they can find a vacant one in their locality; and each pair of swifts, if possible, likes to have a chimney all to themselves. The nest is made of dry twigs stuck together with a kind of natural glue which comes from the bird's own mouth; and when it is finished it looks like a semicircular bracket of rough basketwork sticking to the brick wall inside the chimney.

Four or five white eggs are laid inside the basket cradle. And when they are hatched, and the young swifts open their eyes and look round to see what the world is like, they find themselves surrounded on all sides by high black sooty walls, with a patch of blue sky overhead by way of a ceiling. It seems an odd nursery for such dainty baby birds!

But the youngsters do not stay down the chimney very long. As soon as they are strong enough they scramble up the side and look out over the top. And how surprised the little birds must be when they have their first glimpse of the wide world, with its green fields and trees and sparkling streams, spreading out in all directions down below!

As soon as the nestlings are ready to leave their chimney home the young birds and their parents join one of the flocks of swifts that are preparing for their autumn flight, and away they go sweeping back and forth over the countryside. For a week or two we see them and hear them, and then they are gone!

Where have they gone? Well, we know they fly south. They pass over towns and cities, spending the night in tall chimneys whenever these strange bedrooms are available, and then, in the early hours of the

morning, rising and moving on. We can follow their flight until they reach the northern coast of the Gulf of Mexico. Then they disappear. And where these great companies of swifts spend the winter, nobody knows. This is the swifts' secret, which, so far, no one has discovered. But as surely as spring follows winter, so surely when April comes round again shall we hear a joyful twittering far overhead and, looking up, see our friends the swifts, wheeling and circling once more in the sky.

The First Home of the Chimney Swifts

In bygone days, when North America was uninhabited except by tribes of Indians, there were of course no chimneys for the swifts to build in; so they made their nests inside old hollow trees. But when the white man settled in the country and built towns and houses almost everywhere, the birds forsook the trees for his tall, dark chimneys, which they seem to think make much more convenient houses to sleep in and nurseries for their babies. When no chimneys are available swifts will still build inside trees, or in towers and barns or under the eaves.

In China and other Eastern countries the sea swifts that build in caves or on the face of cliffs on the seashore, make the strangest of nests out of nothing but the gummy saliva which flows from their mouths. No sticks or other building material are used, and the nests look like half saucers made of frosted sugar. The Chinese people collect these nests and boil them down into "birds' nest soup," which they consider a great luxury. It has a delicate flavor not unlike chicken soup, and the solid part of it reminds one of tapioca.

From her home in the chimney's sooty depth the chimney swift comes forth to dart over the countryside in graceful, swirling flight. Once you have seen the bird on the wing, you will know it ever afterward.



Sometimes during a heavy rain the nest of the chimney swift is dislodged and falls, babies and all, into the fireplace below. When that happens, treat the helpless, bewildered youngsters tenderly.

Photo by U. S. Bureau of Biological Survey

The STORY of BIRDS

Reading Unit No. 5

BIRDS WHO LOVE THE LAKES AND BROOKS

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

The habits of birds found near water, 4-41-50

The habits of flycatchers, 4-42-45

How the kingbird earns his name, 4-45

The habits of the red-winged blackbird, 4-45-46

How the kingfisher fishes, 4-48-49

How we got the phrase "halcyon days," 4-50

Things to Think About

Why is the phoebe useful to us?

What bird nearly always decorates its nest with a cast-off snake skin?

What small bird often chases hawks and crows away?

What birds make the marshes

noisy in the spring?

Why does the belted kingfisher dive underneath the water?

How long is the tunnel in which kingfishers live?

What is the legend of Alcyone, the daughter of Aeolus?

Picture Hunt

What bird is often seen near bridges? 4-41

What bird eats reptiles? 4-42

How does the crested flycatcher scare off enemies? 4-43

What bird does not fear enemies

many times its size? 4-44

Where do kingfishers nest? 4-48

How does the Australian kingfisher get water in dry weather? 4-50

Leisure-time Activities

PROJECT NO. 1: Stand near the edge of a meadow and watch a kingbird as it goes after some insect.

PROJECT NO. 2: Locate a kingfisher along a stream and see how it goes after a fish.

Summary Statement

The phoebe destroys enormous numbers of insects. Related to the phoebe are flycatchers, all of them excellent insect hunters. The kingbird fears no other bird and attacks even hawks fearlessly.

In the marshes we find red-winged blackbirds who fill the air with their song in the spring. The kingfisher may often be seen diving for fish.

BIRDS WHO LOVE THE LAKES AND BROOKS

You may be sure that this phoebe is perched near a bridge. There above the rushing waters his mate is sitting on her eggs. The lining of the nest is horse-hair—and in it the babies often get considerably tangled. The eggs hatch in two and



a half weeks and the young birds stay in the nest two and a half weeks longer. When they are two weeks old their under parts are washed with pale yellow, a feature not found in the parents. In this respect they are like the crested flycatcher.

Photo by U.S. Bureau of Biological Survey

BIRDS WHO LOVE *the* LAKES and BROOKS

The Useful Phoebe, the Clever Flycatchers, and Many Other Feathered Folk Haunt the Quiet Nooks Where They May Hear the Murmur of Running Water or the Lapping of the Waves

ONE of the best places to look for birds is along the banks of a gently rippling brook. For all birds love water, and they will come from far and near to bathe and drink in lakes, streams, and rivers throughout the summer days. Then, too, many of the little feathered folk make their nests in the overhanging trees, or among the tangle of weeds and bushes close to the water's brink—to say nothing of the ducks and water fowls who hide their nests in the reeds and rushes.

Perched on a slender bough down by the waterside we may, perchance, come upon a sturdy little brown and gray bird with rather a big head for his size. As he sits there swaying gently in the breeze he keeps jerking his tail in a funny, impatient way, and calling "phoebe, pewit, phoebe!" This is the little phoebe, introducing himself to you by repeating his own name over and over again.

Keep still and watch. Presently you will see the little fellow spring into the air and make a lightning dart at a flying beetle as it comes zooming across the stream. Snap goes Phoebe's wide beak. The beetle disap-

pears. And the smart little hunter returns to his perch well pleased with himself.

Phoebe, like the swallows, always captures his food on the wing. He darts at every flying insect that passes near his post of observation—beetles, flies, moths, even wasps, are all caught and swallowed, and grasshoppers are seized in the midst of their flying leaps. A useful bird is the little phoebe. He destroys untold numbers of those troublesome weevils that bore into the buds and leaves of trees and valuable food crops, and down his throat go swarms of irritating flies that bite and sting the cattle grazing in the pastures near the waterside.

In the early summer he is especially busy, for then he is almost sure to have a wife and family at home to feed, as well as himself to look after—and you know what hungry little creatures baby birds are! While his wife is sitting patiently on her clutch—or sitting—of white eggs, her husband is most thoughtful and attentive. He keeps flying home to her with a nice plump insect in his beak, and his tiny spouse accepts his present with a gratified little twitter.

BIRDS WHO LOVE THE LAKES AND BROOKS

Phoebes are friendly, trustful little birds. If there is a farmhouse or a cottage near a brook or river, they will often come and build under the veranda or in the porch, or find a quiet corner to suit them in a barn or tool shed. But best of all they love to fix their nest underneath an old bridge. And then the first thing the baby phoebes see when they peep over the edge of their nursery is the water bubbling and gurgling down below with, perhaps, shoals of brisk little fishes swimming about in it!

How the Phoebe Builds Its Nest

The phoebe's nest is a very large one. There is plenty of room in it for five or six baby birds to snuggle up together without being uncomfortably crowded. It is made of mud, and is well plastered on the stone pier of the bridge or on a crossbar under the veranda roof. Bits of straw or grass are worked into the mud by these clever little mason birds—who learned to make bricks before ever we did—and the nest is lined with horsehair, which makes a nice spring mattress for the lucky young birds. Most phoebes cover the outside of the nest with moss; others leave the mud walls bare. It all depends on the individual taste of the little builder.

Before winter comes the phoebes are all off and away to spend Christmas in the gulf states or in Southern Mexico. But back again they come next summer to rear another little family in the more temperate parts of North America. For great heat is not good for the baby birds, so their wise little parents build their nests in the cooler regions throughout the United States; some even fly as far north as Southern Canada.

The black phoebe, however, who is just such another delight-

ful little bird as its brown and gray cousin, seldom ventures further north than Texas and California. There it regularly builds its nest among the rocky canyons of the foothills, where sparkling streams splash and tumble over granite boulders and turn aside here and there to form quiet pools under overhanging willows and sycamores. Could the gentle little birds find a more delightful spot to spend the summer and build their nursery?

The phoebes belong to the flycatcher family, a large family of most useful little birds who, with the swallows, act as aerial policemen. While the thrushes, sparrows, finches, warblers, and hosts of other friendly birds wage war on the armies of insect foes that swarm upon our trees and our valuable food crops, the swallows and flycatchers do their best to clear the air itself from deadly mosquitoes and other flying pests which do harm to man and beast.

Birds That Love Hot Weather

Most of the flycatchers—and there are nearly six hundred of them—are South American birds that seldom leave their sunny homeland for cooler climates. About thirty of them, however, cross the Mexican border to spend the hottest months of the year in the United States; but only a few species find their way up to the northern parts of the country.

Sometimes by the side of a lake or stream in the middle or northern states—or even on a quiet country road—we may come across the “least flycatcher,” a small olive-gray bird with a big head and



Photo by American Museum of Natural History

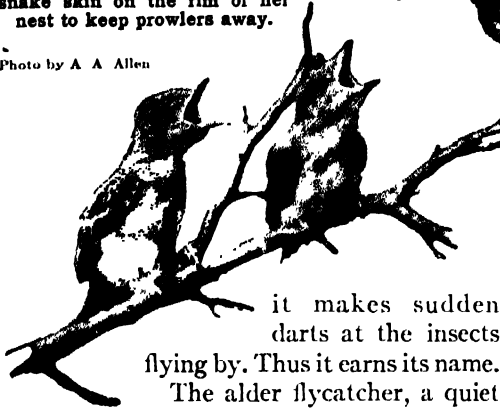
The laughing jackass of Australia has left the rivers and streams and now lives in the woods. In his new home he feeds on reptiles and bugs.

two white bars on its wings. It has a quaint little song that sounds like “che-beck, che-beck, che-beck!” Like other flycatchers it spends most of its time sitting on a slender twig from which from time to time

BIRDS WHO LOVE THE LAKES AND BROOKS

This crested flycatcher is feeding her charming children. She often puts a piece of cast-off snake skin on the rim of her nest to keep prowlers away.

Photo by A. A. Allen



it makes sudden darts at the insects flying by. Thus it earns its name.

The alder flycatcher, a quiet little bird that lives in the thickets of alder, willow, and spirea by the side of rippling brooks, and the yellow-bellied flycatcher, who loves mountain brooks, are regular summer visitors in the north. You will be able to recognize them by the way they all have of springing into the air to hunt flying insects.

But much better known are the crested flycatcher and his cousin the bold kingbird.

The crested flycatcher is a grayish-brown bird, about as big as a robin, with touches of olive and reddish brown on the edges of his wings, a pale gray throat and bib, yellow waistcoat, and two conspicuous bars on his wings. He is happiest among tall trees on rather open forest land, but will make himself at home in all sorts of situations. You may find him on the borders of oak or pine woods or among the blue gums growing by the streams in marshy places. He will come to the apple orchard or the shade trees in the garden, or make his nest in old stumps on land where the trees have been cut down and new growth is springing up all round. He is rather a wild

and noisy bird, always ready to pick a quarrel with his friends and relatives or with any small bird he happens to meet. From his wild and somewhat rough behavior he has been dubbed the "wild Irishman" of the flycatcher family. When he is excited the long feathers on the top of his head stand up like a crest and he gives a long, high-pitched whistle—"whee-ee-eee"—or shouts at the top of his voice "rra-rra-rra-a!"

Yet the crested flycatcher is a devoted husband and a good father. He helps his mate to build the nest, which is usually composed of a mass of rubbish stuffed into a hole high up in a tree. Sometimes, it is true, a pair of these flycatchers will take over a nesting box or build in some queer thing, such as an old pail that has been thrown away into a clump of bushes.

Twigs and grasses, bark from the trees, dead leaves, tufts of hair, pine needles, feathers, and odds and ends of all sorts are collected by the birds and twisted up together to make the babies' cradle. And strange to say, they almost always add the cast-off skin of a snake to the nest as a finishing touch. Why they do this it is difficult to say. Perhaps they

think the snake skin will frighten other birds away and make them give the nest a wide berth!

The kingbird, who is found in the summer time throughout the Central and Eastern United States, as far as the borders of Canada, is about the same size as his crested cousin. He is a smart-looking bird, black on the head and back, with a white band across the end of his tail and a snowy waistcoat. On the top of his head he has a bright orange-red spot which is usually covered by

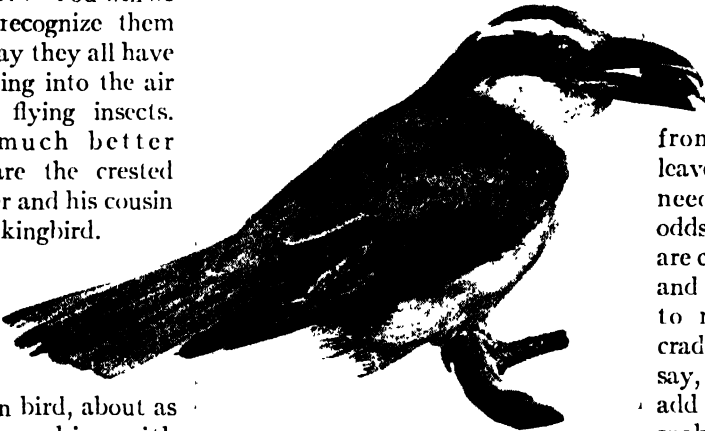


Photo by American Museum of Natural History

The true flycatchers are found only in the New World. This big fellow comes from the Tropics of Central and South America.

BIRDS WHO LOVE THE LAKES AND BROOKS



Photo by Nature Magazine

This kingbird is protecting her eggs from the broiling sun. She is often known as a "bee martin" because of her fondness for bees. While flying she utters a pretty little whistle.

sects disappear down the kingbird's throat!

But it is hardly likely that the bird is quite so clever as all that. It is much more likely

the dark feathers growing round it. But when he pleases, the kingbird can

that he automatically spreads out the dark feathers on his crown when he spies a fine big insect coming his way—just as the crested flycatcher raises his crest when he is excited.

Like most flycatchers the kingbird is fond of the waterside. He is usually to be found by the banks of a stream in

While his wife is building a firm little house, our kingbird is not giving advice, but is keeping other creatures from his domain. He is bold, and does not fear birds many times his size.

move the feathers on his crown to show this hidden beauty spot. Some folk say that the bird displays his red feathers to trick foolish insects into thinking that it is a bright flower. And then, when they come flying up to see if there is any honey to be had, click goes his beak, and the inquisitive in-

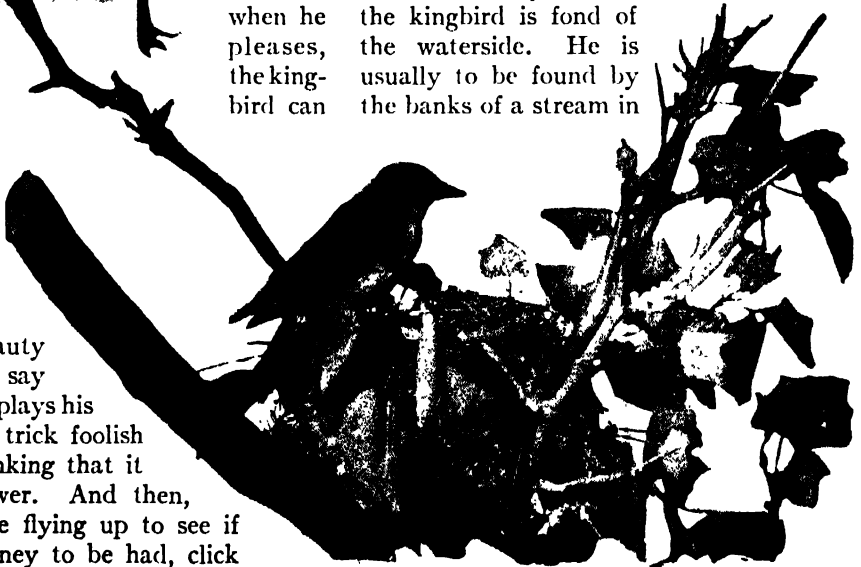


Photo by American Museum of Natural History

BIRDS WHO LOVE THE LAKES AND BROOKS

open country where there are plenty of scattered trees, or on the margin of a lake. There throughout the long summer days he spends most of his time patiently sitting on the topmost bough of a small tree, turning his bright eyes now this way, now that way, as he scans the sky for something good to eat. The instant an insect appears in sight, be it fly or beetle, bug or mosquito, the kingbird is after it in a flash. Then, seizing his prey in his beak, he returns to his post of observation and waits for another unsuspecting victim to pass near.

But not only does the kingbird chase and capture winged insects, he is a thorough "king-of-the-castle" in his own territory, and will allow no other hunters to trespass in his kingdom. Small, unoffending birds may come and go unmolested. But let a crow, a raven, or even a hawk fly over his ground, and like a winged fury the kingbird hurls himself at the invader. With loud, angry, chattering cries the valiant little warrior pursues his enemy and pecks him so violently on the head and back that the big bird is usually glad to beat a hasty retreat. A bold little kingbird was once actually seen to drive away a great turkey vulture by alighting fearlessly on its back and stabbing at the big bird of prey with his strong, sharp bill!

Many flycatchers eat a few berries or wild fruits when insect food is scarce, and the kingbird is no exception. But an insect diet best satisfies this very particular bird. After a heavy storm when the wind and rain has beaten nearly all the frail winged things to the ground, you may sometimes see him down beneath the trees busily searching for

bugs and flies and beetles among the fallen leaves. But this is not a natural way for a kingly kingbird to seek his food. He is not really happy when he is on the ground.

The red-winged blackbird is sure to be found not far from the waterside.

You may find its nest hidden in bushes or trees along the river banks or fastened to a clump of tall reeds growing on marshy ground. It is woven of coarse grasses, and the thoughtful parents always make it strong and deep. So when the wind blows and the rushes bend and the cradle rocks in rather a dangerous fashion, the baby redwings are not tipped out into the mud or water down below.

A male redwing is a splendid fellow—not quite so big as a robin. In the spring and summer time his plumage is a beautiful glossy black; but on each shoulder he has a gorgeous red shoulder strap bordered with golden yellow. On account of this military decoration the redwing is sometimes called the officer bird. The female is not a bit like her handsome mate. She is at least an inch shorter than he is, and very plainly dressed in a streaked suit of black and brownish gray.

The male redwings come north in large flocks early in March, before the willows by the streams in the sweet-flag swamps are even faintly tinged with green. For several weeks they flit gaily over the marshes and perch among the withered reeds and cat-tails or fly to the uplands to feed. On all sides you may hear their liquid, bubbling song—"O-ka-lee. O-ka-lee!"—as if they were calling to their tardy mates to hurry up and join them in their delightful summer camp.

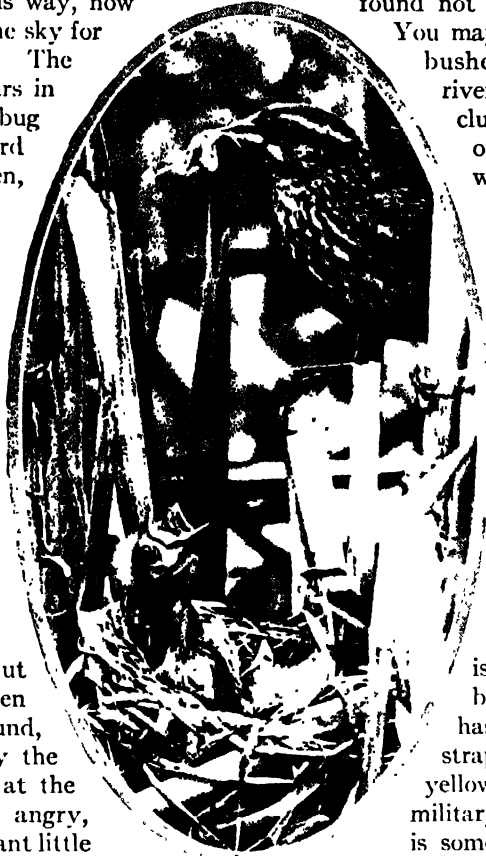


Photo by A. A. Allen

These little redwings are all mouth when their mother returns with a nice juicy dragon fly. The mate is probably on duty to keep "enemies" away from the home.

BIRDS WHO LOVE THE LAKES AND BROOKS

When the hen birds at last make their appearance great is the excitement among the officer birds. They flaunt their scarlet shoulder straps, whistle and sing, and chase each other and the coy lady redwings all over the place. It is some time before this merry-go-round ceases and the birds settle down to serious business—for it is no use starting nest building until the reeds have grown tall enough and strong enough to support the neat little cradles.

A mother redwing lays three, four, or five pale blue eggs. They are streaked and spotted with black or dark purple, just as if someone had scribbled all over them with ink. In about twelve days' time the eggs hatch, and then both the father and mother scour the neighborhood to collect food to fill the gaping beaks of their hungry children. It would hardly be safe to say how many insects disappear down their throats before the young redwings are ready to leave the nursery. The little father also keeps a watchful eye on his house and his little family. Should a crow, a jay, or a hawk appear in sight, he ruffles up his feathers and warns off the intruder with a harsh "chack! chack! chack!" And if the unwelcome bird won't take this hint, the redwing dashes out and flies round and round his enemy, scolding loudly—"pee-ah! pee-ah!"—until the invader turns tail and goes off in disgust.

Farmers complain that blackbirds often damage their crops by pecking the heads of the growing grain. But the crops would suffer far more from the attacks of insect pests if no blackbirds visited the fields. When they come north in the early spring the redwings forage in the fields and meadows, destroying hosts of greedy caterpillars. They follow the plow, too, and snap up the

worms and grubs which are brought up to the surface. It has been calculated that all the redwings in the United States will, in four months, demolish 16,200,000,000 insects!

When the young birds are ready to fly, all the redwings in the neighborhood flock together and flit over the countryside in search of food. As the days grow colder, from the marshes

and prairies throughout the Northern States and Canada others of the tribe come hurrying up to join the traveling parties moving south. Tens of thousands of redwings sometimes make the journey in company,

flying in regular order, turning right or left all together like a regiment of well-trained soldiers. They

sweep onward like a cloud in the sky, passing over woods and thickets, and descending in a body to feed in the fields by the way. Then, when they have finished their picnic meal, there is a sudden rush of black wings as the birds rise into the air and speed on to their next halting place.

In the South and West they do help themselves rather too freely to the farmer's crops. But in the northern states the redwings do little harm. They are welcomed for their help in keeping down the insect population and so preventing the ravaging hordes of caterpillars, click beetles, weevils, wireworms, and other greedy grubs from eating up the countryside.

The Shy Rusty Grackle

The rusty blackbird—sometimes called the rusty grackle or thrush blackbird—is not so well known as his red-winged cousin. He is a shy and rather a rare bird, and seldom pays more than a passing call on the northern and middle states. He will sometimes spend the summer in northern New England; but



Photo by U. S. Bureau of Biological Survey

This redwing is worried. Perhaps a marsh hawk has an eye on one of the baby redwings, thinking it would make a tasty meal. However, the father is a faithful defender of his home.

BIRDS WHO LOVE THE LAKES AND BROOKS

as a rule he flies to Canada, and often as far as Alaska, to build his nest in the thickets in the swamps or on the borders of streams. However, if you should chance one day to see a blackbird slightly larger than a redwing with pale yellow eyes paddling about on the margin of a lake or river, busily pecking insects and other small water creatures out of the mud, you may guess he is the rusty blackbird. For this blackbird, more than any other member of his family, loves to dabble in the water and wet his feet.

The Louisiana water thrush is another bird that is never happy far from the sound of splashing water. You may find him throughout the summer popping about on the edge of a woodland stream or a moving, gurgling brook that tumbles through the woods on a hillside.

You may know the water thrush by the sprightly way he flits from rock to rock, bobbing and bowing and flicking his tail up and down as he calls "chip! chip!" to his little mate, who perhaps is sitting on her nest under the bank or the roots of a fallen tree.

He is a smart little fellow, much smaller than the redwing. His head, back and tail feathers

are plain brown, and over each eye is a creamy-white stripe. His throat, waistcoat, and the under side of his turned-up tail are creamy white, too, well streaked with dark brown. Doubtless it is his speckled

waist that has given this dainty little water-loving bird his popular name. For really he is not a thrush at all, but one of the wood warblers.

A similar species found in Canada during the summer never ventures far from the wooded swamps.

Another charming little warbler we may often meet by the side of a woodland stream is the redstart, a wee black and

red bird that whisks about like a woodland sprite, singing "ching, chee, chee! ser-wee, swee, swe-e-e!" He seems overflowing with happiness, as if he thought summer was a lovely time and his leafy

home in the willows and aspens the most delightful home in the world.

The redstart's nest is nearly always fixed in the crotch of a sapling high above your head. It is made with strips of bark, leaves, stalks, and soft, fluffy down from the plants, and lined with the finest rootlets or delicate tendrils; and the tiny white eggs in this neat little cradle are spotted and speckled with brown and lavender.



Photo by A. A. Allen

This little redstart does not know what to make of a camera, but she is going to protect those eggs at all cost.

One by one these little Louisiana water thrushes are being fed. When the mother has been the rounds it is time to start all over again.



Photo by A. A. Allen

BIRDS WHO LOVE THE LAKES AND BROOKS

This is a brave little bird. He surely must feel that he is risking his life to feed the youngster—though we know well that the finger would not harm a single feather. The baby, not having learned to fear man, is having a thoroughly good time.

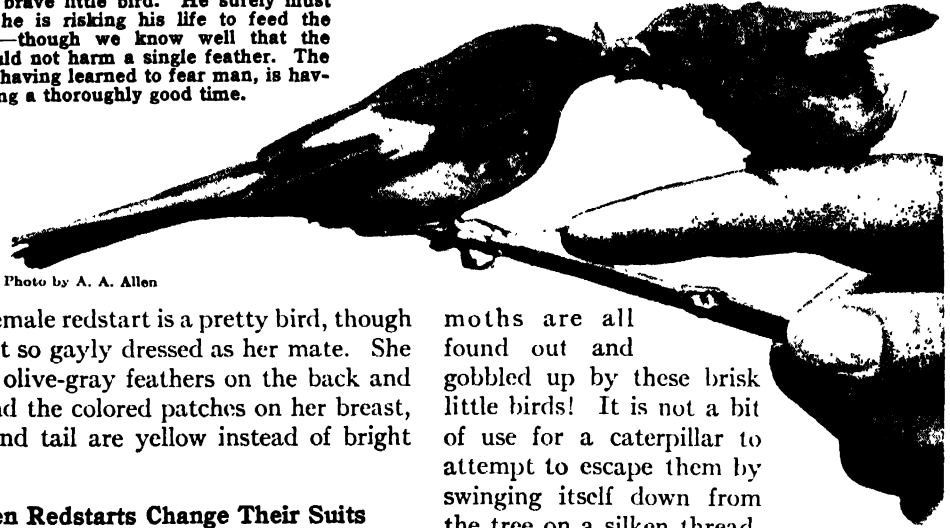


Photo by A. A. Allen

The female redstart is a pretty bird, though she is not so gayly dressed as her mate. She has soft olive-gray feathers on the back and head; and the colored patches on her breast, wings, and tail are yellow instead of bright scarlet.

When Redstarts Change Their Suits

All baby redstarts are like their mother until they are a year old. So when next spring these merry little warblers come trooping back from the south to their summer home, the young male birds will still be dressed in olive and yellow. Not until they have chosen their little mates and helped to build their first nest will they change to their grown-up suits of red and black.

Everyone welcomes the return of the redstarts to the northern states. They are such jolly, friendly, useful little birds! All through the spring and early summer days they cheerily sing from dawn to dark, as they flit lightly through the trees and thickets, the shrubberies and orchards, and flit down by the waterside. With outspread tails and fluttering wings they dance through the leafy boughs, hunting, always hunting, for the insects that hide under the leaves and in every crack and crevice in the bark. Small caterpillars, bugs and beetles, flies and tiny

moths are all found out and gobbled up by these brisk little birds! It is not a bit of use for a caterpillar to attempt to escape them by swinging itself down from the tree on a silken thread.

In a trice a redstart will be after it and seize it as it dangles helplessly in mid-air! They chase the nimble grasshoppers too, as the insects leap and bound on their long hind legs; they snap up the gnats and midges dancing in the sunshine; they seem to enjoy every minute of the happy summer time.

When watching the birds by the waterside we must keep a special lookout for the belted kingfisher. For only on the banks of wooded lakes and quiet shady pools, or by the side of a murmuring stream that

winds through the woods are we likely to catch a glimpse of this interesting bird. His favorite occupation is fishing. Perched on an old tree stump or a bough overhanging the stream, he gazes unwinkingly into the water rippling below, patiently waiting for a silvery fish to come swimming by. Then is the best time to study the kingfisher, for he sits as motionless as a stuffed specimen in a museum!

But don't let him see you, or he will be



Photo by A. A. Allen

Kingfishers usually nest in banks along streams. A portion of the earthy wall was removed before this picture could be taken.

BIRDS WHO LOVE THE LAKES AND BROOKS

off like a shot. Away he goes, skimming swiftly over the water until he is lost to sight; and then he may not return to his perch for a long time. But if we are careful not to startle him and if he does not suspect that we are watching him, we shall be able to have a good look at the kingfisher and see how he catches his dinner.

He is an odd-looking bird with

a very big head and a short, square tail. His gray-blue feathers are speckled with white. Round his neck he wears a white collar, and across his white breast a gray-blue colored belt. On the top of his head is a wild-looking crest of long dark feathers, which nearly always stand up on end. Then, too, his legs are short and his feet are small and weak; but his beak is remarkably big and strong, with a sharp point and sharp cutting edges—just the right kind of weapon for spearing and holding fast a slippery, wriggling fish.

Just as you make up your mind that this curious bird will never move, and that it is no use watching it any longer, the kingfisher makes a sudden dive into the stream and disappears beneath the water. In a moment he is up again and back on his perch, with a glistening fish in his bill. He bangs the poor thing hard two or three times against his perch to stun it, gives it a jerk and a shake to get it into the right position, and then swallows it head first.

You will never see more than one king-

fisher, or a pair at most, fishing in the same part of the stream. Each bird takes possession of a certain stretch of water and allows no other kingfisher to poach in his reservation. Sometimes instead of fishing from a bough he glides backward and forward over the stream. Choosing his fish, he hovers for a moment above it. Then, closing his wings, he plunges into the water after his prey. But he always carries his prize to some convenient perch, and beats it well before he swallows it.

The Kingfisher's Nursery

The kingfisher's nursery is just a hole in the bank scooped out at the end of a tunnel, which may be four or sometimes eight feet long. The parent kingfishers both take their share in tunneling out their burrow, using their stout bills as digging tools and scraping the loose earth out backward with the claws on their toes. No bed of any kind is prepared for the young ones; they just have to lie on the floor of their nursery at the end of the tunnel. But since the devoted parent

kingfishers keep stuffing the children with fish from morning to night, the little birds are soon surrounded with piles of bones and fish scales, which must, one would think, be very

unpleasant. We can be certain however, that the kingfishers have no objection to this garbage pile.

As soon as the young kingfishers are able to move about, they scramble down the tunnel and huddle up together just inside the doorway, or sit all in a row on a branch near at hand, waiting for their dinner. Their parents continue to feed the little birds until the youngsters are able to fish for themselves, and to catch crayfish, small frogs, and such



Photos by A. A. Allen and American Museum of Natural History

The upper bird is our familiar belted kingfisher. He seems to wonder what to do with such a big fish. The kingfisher in the oval is from the island of Tahiti, in the Pacific Ocean.

BIRDS WHO LOVE THE LAKES AND BROOKS

little live things, which swarm by the water-side.

When the northern lakes and streams are frozen over, the kingfishers move farther south, stopping to fish on the way whenever they reach an open stretch of water. They do not always follow the course of the streams, but take short cuts overland in order to reach a milder climate more quickly. Some fly to the West Indies or to Northern South America; others pass the winter months in the southern states and a few even in New England. But as soon as the ice has melted away and spring comes round again, the kingfishers wend their way back to their old northern haunts.

Where the Kingfisher Got His Coat

The belted kingfisher is the only one of his kind to make his home in North America north of Texas, though he has several distinguished relatives in other parts of the world. The European kingfisher is famous for his lovely feathery coat, which changes from peacock blue to gleaming green as he flashes over the water in the sunlight; his breast is a rich chestnut red.

There are many charming old legends told of this bright bird. One story goes that when Noah set the kingfisher free from the Ark, it flew straight toward the setting sun; and the sun's rays scorched its heart while the blue of the sky was reflected on its back. So ever since then it has worn the colors of the sunset.

Another still more charming fable comes down to us from the ancient Greeks, who called the kingfisher the halcyon (hăl'sī-ŏn). Here it is:

Alcyone (ăl-sī'ŏ-nē), the beautiful daughter of Aeolus (ē'ŏ-lŭs), god of the winds, was married to Trachis (tră'kīs), the son of the

Morning Star. But sad to relate, her husband was shipwrecked soon after the wedding day. Poor Alcyone was so distracted with grief when the news was brought to her that she threw herself into the sea to rejoin her husband. As she touched the water she was changed into a beautiful, glittering bird, and evermore she flies backward and forward over the water, seeking her lost love.

What Are "Halcyon Days"?

The halcyon was said to build a floating nest and brood on the water in midwinter, and during that time the weather was always calm and still. Those quiet, peaceful days which come in the midst of the wintry storms were called "halcyon days." And even to-day, when we speak of happy, restful days that come as a welcome break in the midst of care, we often refer to them as "halcyon days."

There are several brightly colored kingfishers in Africa, Asia, and the East Indies. One lovely white bird with bright blue wings, a native of a group of islands off Northern Australia, is called the racket-tailed kingfisher because it has at the end of its tail two long streamers which broaden out at the tips into small racket-shaped feathers.

The Strange Laughing Jackass

Another Australian kingfisher is commonly called the "laughing jackass" from the loud gurgling noise it makes when it is startled or calling to its mate. This bird often lives in the forests far away from water of any kind, and feeds on insects, worms, and lizards, or even a small snake or rat.

Of course the kingfishers are not "singing birds," and they all have rather harsh voices. The belted kingfisher makes a loud clattering noise when he is startled.

This rather top-heavy bird is a South Sea kingfisher that lives in the Fiji Islands. The kingfisher family is scattered far and wide over the earth.



Photo by Field Museum

A kingfisher of Australia can live and be happy in districts where the heat is unendurable and not a drop of water is to be had. Its diet consists of snakes.

The STORY of BIRDS

Reading Unit No. 6

BIRDS OF THE GREENWOOD

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

Why birds hide their nests, 4-52
The habits of the thrushes, 4-53-54

How the veery lives, 4 54-55
How to attract a veery, 4-55

Things to Think About

What kind of enemies do birds have?
Why do some birds build nests in thick bushes?
What bird is a famous singer in the woods?

Why is the hermit thrush so called?
When does the hermit thrush sing his best?
Why does the veery stop singing in July?

Picture Hunt

How can one recognize the wood thrush? Color plate, frontispiece, Volume 4
Where does the olive-backed thrush build her nest? 4-52
What markings do thrushes have?

4-53
What unusual diet did one thrush have? 4 54
Why does the mother bird put its beak so far inside its baby's mouth? 4-55

Leisure-time Activities

PROJECT NO. 1: Make a survey of the places in your community where birds are nesting.

Do not molest them.
PROJECT NO. 2: Learn to imitate bird calls, 4-55

Summary Statement

The songs of birds in the woods always attract us. But very often birds are in danger there from such enemies as snakes, weasels, other birds, and even boys and men who shoot them or steal their

eggs. So birds try to hide their nests. The birds we hear in dense woods are usually the thrush and the veery. The wood thrush and the hermit thrush are famous songsters.

BIRDS OF THE GREENWOOD



Photo by Cornelia J. Stanwood

Most thrushes are ground-loving birds. They hunt for food in a silent, stately way. This olive-backed thrush nests in the evergreen forests of the far north,

and spends the winter in South America. He is not often seen on migration because of his shy habits. The robin is a member of the thrush family.

BIRDS of the GREENWOOD

Do You Know the Ways of the Wood Thrush, and the Wild Sweet Note of the Veery? And Have You Heard the Hermit Thrush, the Finest Feathered Songster in America?

WHEN we think of quiet green woods we always think of birds, too. For there always are many charming little feathered folk living their lives among the leafy boughs. There they flit "on colored wings" from tree to tree, feast on the seeds and fruit and berries, or on flies, beetles, and caterpillars if they so prefer. There they sing their cheerful songs and build their neat nests, happy and free as Mother Nature intended them to be.

Not that the birds in the woods—or anywhere else—are always safe and free from care! Storms may break the trees and destroy the pretty nests they have taken such pains in building. Snakes and weasels, squirrels and rats, as well as thieving birds, such as jays and grackles, may steal the eggs and kill the helpless nestlings. Hawks by day and owls by night are on the watch to pounce down on young heedless fledglings.

And saddest of all, boys and men who should know better, thoughtlessly rob the nests or shoot the defenseless parent birds.

So although they are such cheery, light-hearted little beings, birds are wise and cautious, too. They do their best to outwit their enemies in all sorts of ways. Some perch their nests high up in the forked branches of the trees, or sling them from the end of a slender, swaying bough where few are able to reach them. Others hide their nests in, or under, thick bushes and tangled prickly briar patches. And many cunning birds decorate their babies' cradles with cobwebs, bits of dead leaves, scraps of paper, wool, or tufts of moss to make the little house look like something else—and so deceive prying eyes.

We shall not see or hear many of the little feathered folk in a dark, gloomy forest, for although birds love trees they love air and

BIRDS OF THE GREENWOOD

sunshine, too. In dense woods, where the foliage makes a dark green roof overhead, we may perhaps see a wee winter wren popping about among the fallen logs, or catch a glimpse of a shy brown creeper creeping up a tall tree trunk, like a little brown mouse. And we may hear the sweet solemn notes of a hermit thrush or the plaintive calling of a wood peewee sounding through the leafy aisles. But to hear the happy twittering of young birds, or the joyous morning and evening choruses of the woodland birds at their best, we must seek the open forest glades and clearings, and the borderland of the dense woods places where the breezes play and the sunbeams glance through the leaves.

Of all sweet woodland singers the wood thrush and his cousin the hermit thrush are the most famous. Toward the end of April, when the trees are clad in a mist of green, the wood thrush comes flying in from the south to his summer home in the northern states. In the merry month of May we may hear his sweet, flutelike song ringing through the woods nearly everywhere from South Dakota to Northern Florida. He greets the dawn with a flood of melody, and when the sun is setting he mounts to the topmost bough of a tall tree and pours forth his wonderful evening song. "Ay-la-lee, tre-tre-tre. Tree-ee, tree-ee, ree-ee!" His notes ring out clear as the sound of a silver bell. He sings and sings, then rests, and sings again far into the summer night.

In the daytime we may surprise him hopping or walking about under the trees in a woodland glade, busily hunting for beetles, worms, grubs, spiders, and snails; or he may be collecting small twigs and sticks to add

to the nest his neat little mate is building in the crook of a small tree not far away. Large dead leaves, and sometimes scraps of paper, are mixed with the twigs and sticks; the inside of the nest is well plastered with mud, and then carefully lined with fine rootlets. When this strong and cozy cradle

is quite ready, the female thrush lays three, four, or sometimes five lovely greenish-blue eggs in it. Then she stays at home keeping them warm, until her blind and helpless babies are hatched.

The wood thrush is sometimes called the wood robin; and, indeed, when you see him from a distance as he pecks about on the ground, you might easily mistake him for the friendly little red-breast. For the two birds, who are cousins, are very nearly the same size, and they both hop about in the same sprightly fashion.

But when you come close to him, you will know a wood thrush by his smart white waistcoat, which is dotted all over with large dark brown spots. He is a very shy bird, and is sure to go off in a hurry with a sharp "pit! pit! pit!" of alarm the moment he sees that you are watching him.

When the summer days are over, away goes the wood thrush to Central America, to spend the winter months. His cousin the hermit thrush is content to spend his Christmas holidays in the Southern United States. These two birds are very much alike. Both are brown, with white, spotted waistcoats; but the wood thrush is cinnamon brown, while the hermit—who is the smaller of the two—is dark brown with a reddish tinge on his tail feathers and fewer spots on his under parts.

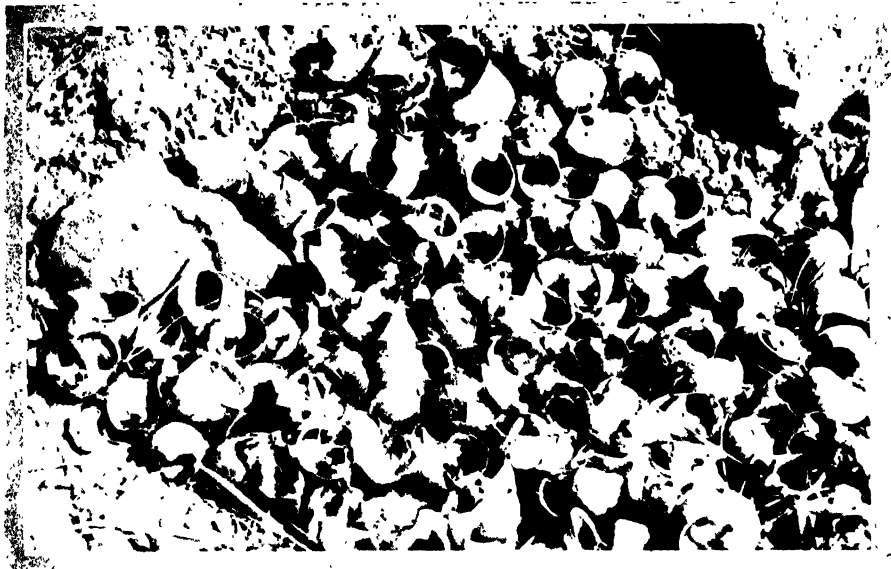
The hermit is the earliest of all the thrushes



Photo by A. A. Allen

The wood thrush is a familiar bird; it is found even in city parks. This mother has lost all but one of her young. The spotted breast, in either adult or young, is characteristic of thrushes.

BIRDS OF THE GREENWOOD



This is what a British thrush had for dinner—though not one dinner, of course. One hundred and eighty

snail shells were found, as shown above, in a thrush's garbage pile on Haywards Heath, in Southern England.

to come back to his summer home. He leaves the sunny south before the winter has really gone, and may often be seen flitting silently through the trees in the northern and north-eastern forests while the branches are still bare and leafless. His name "hermit" suits the quiet, shy little bird very well, for he loves the somber solitude of the dense woods, and if anyone disturbs him in his chosen retreat he slips quickly and quietly away into the shadows with a low "chuck, chuck." There he remains in hiding until the intruder has gone away.

The Hermit's Evening Hymn of Praise

The hermit's nest is made of mosses, dry leaves, and grasses, and carefully lined with rootlets or pine needles. It is usually hidden away in a clump of woodland plants growing at the foot of a small spruce tree, though the thrush and his gentle mate may sometimes choose the tangled growth by the side of a forest road, or a clump of goldenrod or a spirea bush near a brook as an ideal spot for their little nursery.

At dusk, when his day's work is ended, the hermit flies up into a bough to sing his evening hymn of praise. Clear and sweet his deep, bell-like notes ring through the silent glades. He sings and sings, as though

his little heart were overflowing with joy and contentment. Then as the darkness deepens his wonderful song gradually dies away and all is hushed and still in the forest once more

A Songster of the Thrush Family

The veery is another sweet songster belonging to the celebrated thrush family. He is almost the same size as the hermit—about seven and a half inches long from the tip of his beak to the tip of his tail. He too, like most of his near relatives, is dressed in brown; but his snowy waistcoat is only lightly sprinkled with small arrow-shaped marks, instead of with the large dark spots which distinguish the wood thrush and the hermit.

Not until May does the veery reach his nesting ground in the northern woodlands, though his cheery, whistling notes may be heard earlier in the spring in the groves and forests in the south, where he often pauses to sing a little song on his way up from Northern South America or the West Indies to his summer home in the northern states or Southern Canada.

The veery does not lift up his voice quite so often, perhaps, as other thrushes do, but on most days in May and June we may

BIRDS OF THE GREENWOOD



Photo by H. E. Zimmerman

This brown thrasher is going to be certain that the dainty bit is lodged well along toward the stomach of

her youngster. Thrashers are closely related to mocking birds and not to thrushes, as one might think.

hear his delicate silvery tunes, trills, and quavers coming from the green woods early in the morning and late in the afternoon. By mid-July his song ceases, for now the veery is kept busy hunting for caterpillars and other soft juicy insects to fill the gaping beaks of his second lot of hungry babies. It will puzzle you to find the nest, for the two little birds take the greatest pains to hide it right in the middle of a tangle of wild plants at the foot of a tree or a tree stump; or perhaps they may build it on the top of a brush pile overgrown with weeds and young shoots. But the little nest, which is made chiefly of dead leaves and strips of soft bark, is too often found by a thieving jay or a mischievous red squirrel—and then the parent birds are robbed of their beautiful clear blue eggs.

How to Be Friendly with Veeries

Although they are sometimes shy, you may win the confidence of a pair of veeries if you are careful not to disturb or startle them. They will sometimes nest in a thicket or shrubbery quite close to a house. And when they learn that you are friends who will do them and their babies no harm, they will even answer your whistle with a sweet, quavering "whee-e-e," if you call to them as you quietly pass through the trees where they have set up housekeeping.

The brown thrasher is another woodland bird that will sometimes spend the summer months in an old garden where there are plenty of shady trees and bushes to shelter him and his little family. He does not care for dense woods, but prefers to hide his nest in a small thicket in open woodlands or in a thorny hedgerow overgrown with wild roses, on the edge of the woods. There, in the middle of a tangled mass of thorn and prickly, the eggs and baby birds are fairly safe from squirrels and hawks and jays, though a snake may now and then wriggle its way into the nest.

How a Thrasher Protects His Nest

The brown thrasher is sometimes called the brown thrush, for although he is not closely related to the true thrushes, like most of that family he is a brown bird with a speckled waistcoat. The thrasher is quite a big bird, eleven and a half inches long from bill tip to tail tip; so you are not likely to mistake him for the wood thrush or the little hermit.

Although his song is not so sweet as the song of the wood thrush or the veery, his voice is loud and clear, and he sings away lustily throughout the summer. He is a clever mimic, too. He passes the winter in the southern states, and is seldom heard beyond the Northern United States.

The STORY of BIRDS

Reading Unit No. 7

BIRDS THAT SEEK THE WOODLAND SHADE

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

Where warblers live, 4-57
Where to look for warblers' nests, 4-58
The interesting life of the "wild canaries," 4-58-59
How the ovenbird got its name,

4-59-60
The habits of vireos, 4-61
The bird that loves duets, 4-62
The bird with scarlet feathers, 4-64

Things to Think About

Where can one usually find warblers?
Why is it hard to find the home of the ovenbird?
What bird cries "Teacher, Teacher" in the woods?
Why is the chickadee called a "resident" bird?
How can one attract chickadees

to one's house during the winter?
In what unusual way do chickadees and titmice use their beaks?
Why is the female scarlet tanager dressed in olive-green and yellow?

Picture Hunt

Which backboneed animals are the most active? 4-57
What kind of beak has a warbler? 4-58-59
Where does the chickadee go in winter? 4-62

What bird cries its name sadly? 4-64
Describe the yellow warbler. Color plate opp. p. 4-40
Describe the scarlet tanager. Color plate opp. p. 4-40

Leisure-time Activities

PROJECT NO. 1: Plan to attract chickadees and other birds to your home during the winter, 4-2, 61

PROJECT NO. 2: Learn to recognize the birds mentioned in this chapter, 4-57-64

Summary Statement

The woods abound with tiny birds, such as warblers, vireos, peewees, titmice, chickadees, and tanagers. Their color, songs, and busy ways make studying them a fascinating hobby. In

order to attract the "residents," which stay all the year, one has only to put food out regularly on a shelf all winter. The birds will come and their antics will reward you.

BIRDS THAT SEEK THE WOODLAND SHADE

Birds are the most active of all animals that have a backbone. They are even more active than man. This pair of prairie warblers will have to be hard at work most of the time to feed themselves and take care of the nest and their



young. Warblers are usually found in forests, but the prairie warbler has left the home of his forefathers and has taken up his abode in brush-grown fields and along roadsides. The husband at the left is bringing food to his wife.

Photo by A. A. Allen

BIRDS THAT SEEK *the* WOODLAND SHADE

*Here You Will Read of Some of the Shy and Lovely Birds
That Haunt the Quiet Retreats of Open Forest
and Wooded Stream*

IF ON some pleasant afternoon in late spring or early summer you will find a comfortable seat in an open wood or quiet grove, and then sit quite still for half an hour or more, you will begin to feel that you have chosen one of the gayest, busiest haunts in all the neighborhood. For as soon as the feathered inhabitants of the place grow used to your presence, they will come and go about their affairs almost as if you were not there, and you will have all you can do to watch and interpret their movements.

There you will see birds of many sorts. For instance, every wood and thicket from Virginia to Newfoundland is sure to number some of the wood warblers among its summer boarders. They are shy, restless little birds, mostly dressed in brightly colored suits. They flit about the trees and bushes like tiny woodland sprites. Warblers are by no means all alike in their looks or in their

ways. While some go gayly in many-colored suits of green and yellow, white and crimson, black and gold, or blue and white and chestnut, others are gray or olive with bands and patches of lighter hue on their wings and heads and tails. Then, too, some warblers live in the pine woods and some prefer hardwood forests or mixed forests where tall hemlocks or spruces grow among maples and birches. Still others like to spend the summer among the fire cherries and aspens growing along old brooksides, or build them nests in thickets of birch or willow or alder around the edges of a tamarack swamp. Indeed, there are few wooded places up and down the country where some of these gay little birds do not find shelter.

Warblers as a rule are not accomplished singers, though one or two of the family have sweet, clear voices and sing quite pretty little songs, particularly at courting time. Most warblers express their feelings by little

BIRDS THAT SEEK THE WOODLAND SHADE

low trills and chirrups, feeble warbles, or high but pleasant whistling notes. Their pretty little nests are usually cup-shaped, and are made of grass, leaves, rootlets, strips of bark, or moss, all mixed with hair, fur, or spiders' webs. They are found in all sorts of places, from the top of a hemlock tree high in the air to the low branches of an evergreen shrub or a creeping blackberry briar. It depends on the individual tastes of the particular little warbler.

From spring to early summer flocks of warblers come streaming northward from their winter homes—some from the southern states, some from Mexico, Panama, or Dutch Guiana; all the way up from Central America the fresh green woods, hedgerows, and orchards resound with the twittering, whistling, and warbling of the excited little visitors. They are a merry lot.

One of the first to arrive is the black-and-white warbler, a smart little black and white striped bird who takes up his quarters in a hardwood forest or an open forest where many kinds of trees grow. There he spends his days climbing up and down the tree trunks—more like a tree creeper than a warbler. He moves round and round the trunk in a funny jerky way, making little dabs at crawling insects with his beak as he goes. Then he suddenly darts away to another tree, calling "pit-pit!" or "sip-sip!" as he flies, and then starts his zigzag exercise all over again.

Where to Look for a Warbler's Nest

His rather feeble little song sounds like "see-see-see-see!" But the black-throated green warbler sings "see-swee de-de!" or "see-see-see-da-day!" when he is particularly pleased and excited. This little bird

makes its home in a cone-bearing forest or in a spruce or hemlock in a wood where many kinds of trees are growing side by side. There he spends his days flitting about in the tree tops, and there, too, he and his mate fix their babies' cradle ever so high above the ground.

The black-throated blue warbler, on the other hand, hides his nest among the sprouts

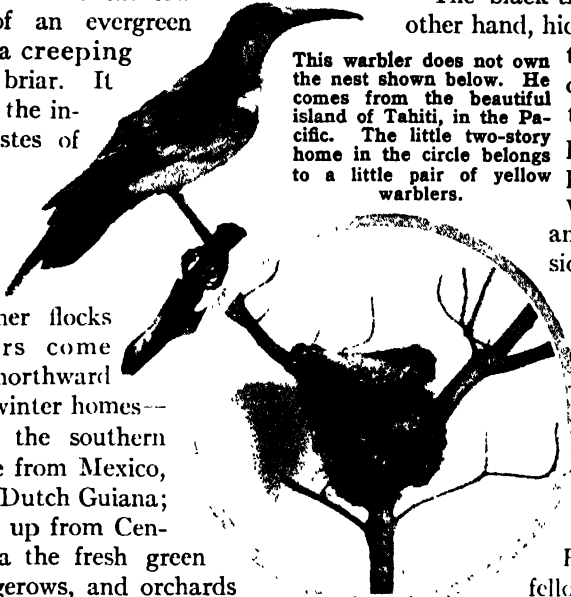
that spring up round the foot of an old beech tree or in the thick undergrowth that carpets the forest floor. He is a pretty little dark blue bird with white patches on wings and tail and black throat and sides of the breast, and he sings a lazy, drawling little song in a somewhat husky voice. It sounds like "say, say, say-ee-e."

One of the largest and hardiest of this big family of small birds is the myrtle warbler, who is nearly as big as an English sparrow.

He is a bright, energetic little fellow, clad in black, gray, or white feathers with golden yellow patches on the crown, the sides of the breast, and the lower back. This is one of the warblers that has a pleasing little song of his own. In the spring and early summer he is often heard singing merrily as he flits about the fir trees in forest glades.

The Friendly Summer Yellow Bird

When summer is over and the migrant birds are moving south again, flocks of myrtle warblers set off on their long journey to Mexico or Panama; but some of these hardy little birds stay behind and brave the snows and frosts of winter among the bayberries of the New England coast. There they fly about in little companies and live on seeds and berries till nesting time comes again. There are so many of these charming little warblers in North America that almost everyone who lives in the country is sure to be acquainted with one or another of them. But perhaps the best-known and best-loved of all is the yellow warbler, which some



This warbler does not own the nest shown below. He comes from the beautiful island of Tahiti, in the Pacific. The little two-story home in the circle belongs to a little pair of yellow warblers.

Photo by American Museum of Natural History

BIRDS THAT SEEK THE WOODLAND SHADE

people call the "summer yellow bird" and others, when they see it flitting through the trees, say is a "wild canary."

This bright little yellow bird, with its faintly streaked breast, is seldom to be found in thick woods. He prefers to spend the hot summer days in a more open, airy situation. So he and his little mate build their neat nest in a bush or a bramble on the edge of a wood; or they may set up house in a thicket of alder or willow by the side of a stream.

The friendly little couple will even make their summer home in an orchard, or in the shrubbery in your garden, quite close to the house. And if, soon after they arrive, you thoughtfully strew little bits of wool or cotton under the trees or on the lawn, the pretty little birds are quite likely to fly down and carry it off to add to the grasses, fine rootlets, and hair with which they are weaving their nests in the apple tree or the lilac bush.

Through May and June you may hear these birds trilling their sweet and simple song in the trees and hedgerows, for the yellow warbler has a musical voice although not a very strong one. But in July the song ceases and you begin to miss the flash of yellow wings in the sunlight; for the yellow warblers will not risk being caught by an early cold snap. They start betimes for the sunny south. By the middle of August some of the little travelers reach Florida, and by September many of them are back again in Central America, although a few may be seen even in the Northern United States until the middle of the month.

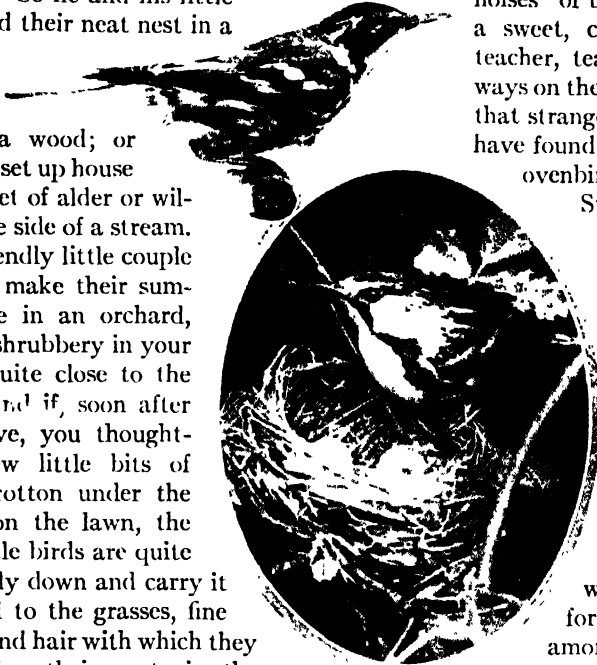
Very different in his ways is the little ovenbird, who also belongs to the wood warbler family. He is a true forester, and is seldom found beyond the woodland

borders. If you wish to make his acquaintance you must penetrate to the heart of the deep wood, where oaks and beeches, hickories and tulip trees stand knee-deep in fern and honeysuckle, and where ivy clammers over the low bushes. Then, as you look about you and listen to all the little "noiseless noises" of the wild woods, you may hear a sweet, clear voice calling "teacher, teacher, teacher!"—with the accent always on the last syllable. When you hear that strange call you will know that you have found the secret haunt of the little ovenbird.

Stand quite still and watch, and maybe you will see a small olive-green bird with a speckled breast and a dull orange cap bordered with black. He will probably be stepping daintily along a low bough or a fallen log.

The ovenbird is not so timid as many small forest folk. If you do nothing to startle him the demure little fellow will continue to walk quietly about, hunting for insects under the bark and among the leaves. He does not hop or run, but walks about sedately, gently wagging his tail the while, and scratches like a chicken among the fallen leaves on the forest floor.

Even if you discover the summer residence of the ovenbird, you will hardly be clever enough to find his nest, which is always most cunningly tucked away under the fallen leaves, the entrance hidden, as a rule, by a curtain of overhanging leaves. It is a most remarkable nest, made of dead leaves and half sunken in the ground. Inside, it is lined with horsehair, and the top is covered over with a substantial rounded roof of leaves and grasses. This gives the nest something of the shape of an old-fashioned bake oven, and this is why the bird that builds it is called the ovenbird. The birds go in and out of this quaint little house through a hole which they leave in



Photos by A. A. Allen and American Museum of Natural History

Because of a beautiful bright patch on his throat the bird above is known as the yellow-throated warbler. In the oval, a chestnut-sided warbler has returned home to find all her eggs safe.

BIRDS THAT SEEK THE WOODLAND SHADE

one side. There the female ovenbird sits in secret, brooding over her clutch of spotted eggs, and the baby birds, when they are hatched, stay at home in the "oven" for nearly two weeks before they are fit to go out into the forest.

Besides his ordinary little song—"teacher, teacher, teacher" or "chink, kerchink, kerchink," which he repeats over and over again as he flits through the lower branches of the trees—the ovenbird has another and much prettier song which he sings when he is feeling especially happy and pleased with everything. With a few wild, ringing notes the little bird darts into the air, mounting up and up until he is far above the tree tops. Then he suddenly bursts into a thrilling flood of melody, and floats slowly down again, ending his song as he drops back into the trees with his favorite cry of "teacher, teacher, teacher!" Few people hear the beautiful "flight song" of the little ovenbird, since it is mostly at night that he gives this musical performance, when most of the woodland birds have finished their evening song and gone to roost.

Another dainty little singing bird that loves the hush of the deep woods is the blue-headed, or solitary, vireo. Dressed in olive-green, yellow, and white, and wearing a blue cap on its head, it comes flying north quite early in the spring, and its high, sweet voice, which sounds like the singing of a little child, is heard in the hardwood or mixed forests from Pennsylvania to Central Canada. So happy is this little bird in its summer home that it lingers until quite late in the autumn before it sets off for the gulf states, where it passes the

winter months in the mild southern air.

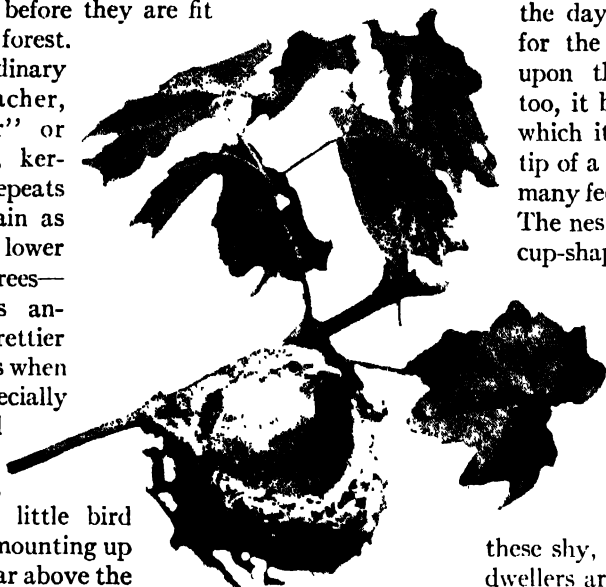
Unlike the ovenbird, little "blue-head" spends most of its time up among the higher branches of the forest trees. There it passes the daylight hours hunting for the insects which feed upon the foliage. There, too, it builds its little nest, which it suspends from the tip of a small forked branch many feet above the ground. The nest is a beautiful little cup-shaped cradle, skillfully

woven of pine needles and plant down; and in it the female bird lays three or four white eggs marked with a few black specks.

Strange to say, these shy, solitary little forest dwellers are most trustful and confiding little birds. When the mother is sitting on her eggs she will often allow quiet, well-behaved visitors to come quite close to her and actually to stroke her very gently.

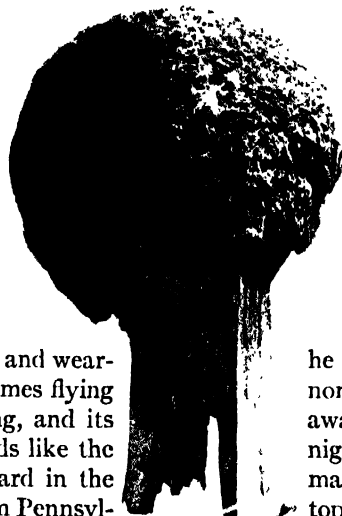
The red-eyed vireo is better known than its blue-headed cousin, for though it is a woodland bird it often builds its nest on the edge of the woods, and frequently in tree clumps quite near our houses.

Although his voice is not so sweet as the solitary vireo's, the red-eyed vireo is a cheery and persistent singer. For the three full months or more that he spends with his mate in his northern summer home he sings away blithely from morning to night. Before the sun has risen you may hear him calling from the tree tops, "Hey there!—come here!—you-you!—John Smith! Wait-a-minute! I want you!" At least one can imagine that that is what he is saying. For this vireo's song is made up of quick, short phrases which



Photos by Cordelia J. Stanwood and Field Museum

This red-eyed vireo is the last of the family to leave home. The abode must have been a bit crowded when all were in it. Below is the peculiar nest of the ovenbird—you can see why the bird bears its strange name.



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sound exactly as if he were calling to a friend. Sometimes he alters his song to "D'you see it? d'you know it? d'you hear me? where you going?" or some other inquisitive sentence of the kind. He is a most conversational and amusing little bird.

The red-eyed vireo is a neat and dainty bird, though not striking in appearance. He is just a little bigger than his blue-headed cousin—about six and a quarter inches long. He wears rather a dull greenish coat and a grayish-white waistcoat. On his head is a slate-gray cap bordered with black, and over his brownish-red eye is a white line with a black streak below it. You will almost certainly recognize the talkative little bird when you happen to meet him. He is quite as tame as the blue-cap, and his little mate has been known to take a grass-hopper from the fingers of a friend whom she has learned to know and trust.

There are white-eyed vireos too, and yellow-throated, black-whiskered, and warbling vireos, who come flying up from the warm southern lands each year when spring comes round, to build their nests and raise their little families in the woods and forests of the Northern United States.

They are all bright, active little birds, mostly dressed in quiet, greenish colors, with white or yellowish waistcoats. But each species—as you can tell from its name—has some special mark or characteristic of its own to distinguish it from other members of the vireo family.

When the summer days are over, away go all the gentle little vireos—red-eyed, white-eyed, blue-headed and the rest of them—to spend Christmas in sunnier climates. Some

fly to Mexico or the gulf states. Others journey on over the sea and through the steaming jungles of South America until they reach far Brazil.

Spring, summer, autumn, or winter, we are almost sure to find some of the jolly, stout-hearted little chickadees whisking about on the woodland borders. You hear their merry, saucy little song—"chicka-dee-dee-dee! chicka-dee-dee!"—ringing through the trees as the gay little birds play follow-my-leader, or give gymnastic displays among the branches like a troupe of wee feathery acrobats!

For the chickadee is a "resident bird." He makes his home in the Northeastern United States or in Canada all the year round, though he does not always stay in the same place, but wanders round, gypsy fashion, up and down the country. So the chickadee who comes boldly hopping to your window ledge for his Christmas dinner may or may not be the same little fellow who frisked around in the trees in the summer. Although he has no brightly colored feathers to boast of, the chickadee in his suit of gray, white, and buff and his jaunty black cap and bib is as neat and elegant as a wee bird can well be; and his friendly ways and amusing antics

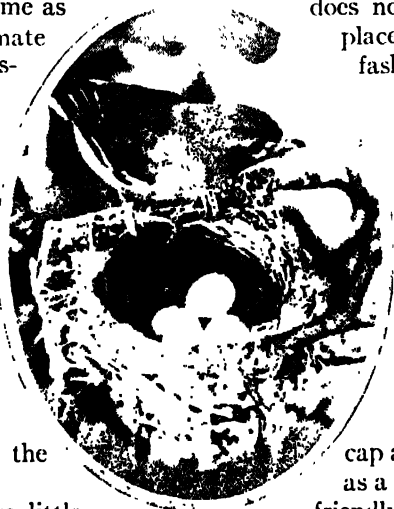
make him a favorite everywhere.

He will leave his green woods to visit the orchard and garden at all times of the year, and will even move into a nesting box if it takes his fancy. He flits boldly round the house to see if he can pick up anything good to eat. He skips and dances up and down the trees, flirting his wings and his impudent tail and twisting his cunning little head from side to side as he hunts for insects among the



Photos by A. A. Allen

The vireos are cousins of the wood warblers. Above, a blue-headed vireo eyes the camera with distrust. Below, a yellow-throated vireo is carefully counting her eggs. The names are descriptive of the birds.



BIRDS THAT SEEK THE WOODLAND SHADE

leaves. He is never still for two seconds together, and is just as happy right side up, upside down, or swinging by his claws from the end of a bobbing spray.

The Chickadees' Duet

Besides the well-known call of "chicka-dee-dee-dee!" from which he gets his name, this saucy little bird has another rather sweet song which sounds like "fee-bee, fee-bee-ee!" This is heard mostly at courting time in the spring, when the male chickadee and his wee wife, who sings just as sweetly, often whistle a little duet together.

The nest of the pretty little pair is always made in a hole in a tree, an old stump, or a wooden post. Down at the bottom of the hole they arrange a thick soft bed of moss, grasses, and feathers, to which they often add tufts of wool and hair or the fluffy cocoons woven by insects to protect their eggs.

A female chickadee lays five, six, or sometimes as many as nine white speckled eggs before she starts hatching them. Her attentive little mate keeps popping in and out while she is sitting, bringing her many a tempting titbit in his beak to keep her spirits up; and he sometimes takes a turn on the eggs himself to give his little wife a rest.

The chickadee belongs to the titmouse family, and has delightful little cousins living in the woods in almost all parts of the world except South America and Australia.

In North America the gray tufted titmouse makes its home in the vine-draped woods of the middle and southern states, and is occasionally found as far north as New York and Connecticut. The wee bush tit, a tiny, fluffy birdling not much bigger than a hummingbird, is a Westerner, living in thickets of alder, hazel, and willow or in oak and hemlock trees all along the Pacific coast from British Colum-

bia to North Mexico. He is a charming bird.

The tufted titmouse is quite as merry and just as clever an acrobat as his cousin the chickadee. He is not quite so friendly, however, and except in very cold weather seldom leaves the shelter of his beloved green woods—though he is sometimes tempted by a particularly attractive nesting box to make his home in an old orchard or garden.

The Funny Little Tomtit

The little titmouse is sometimes called the "tomtit" and sometimes the "Peter bird"—because he is always calling "peter, peter" or "peto, peto" as he flits from tree to tree in his woodland home. But the gay tomtit has much more to say, or to sing, than that. Sometimes he twitters and chatters in a way that reminds you of a swallow. Sometimes he seems to be mimicking a chickadee. Then he will call in clear, ringing notes "ker-ker-ker-ker, kerry-kerry-kerry!" Then he will suddenly scold in a low, hoarse voice exactly like a blue jay's. You never know what this funny little bird will say or sing next!

Tomtit will crack nuts, too, like a jay, holding one firmly under his claw while he hammers away at it with his stout little beak. This is a trick he shares with the chickadee, who hammers his seeds, or anything else too large to swallow whole, to break them up into more convenient pieces.

Acorns, beechnuts,

The chickadee is a cheerful friend. In winter, when most of his feathered allies have flown far to the south, he remains with us. Gladly would he partake of any crumbs from your table.

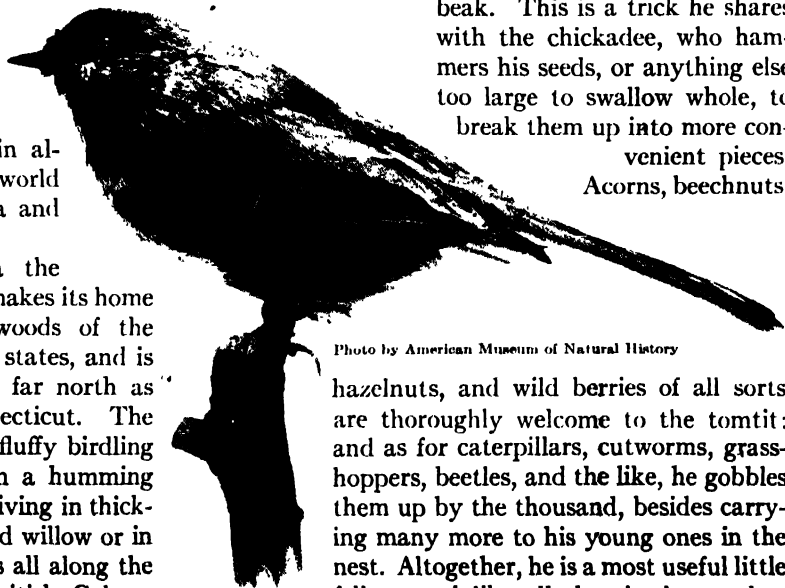


Photo by American Museum of Natural History

hazelnuts, and wild berries of all sorts are thoroughly welcome to the tomtit; and as for caterpillars, cutworms, grasshoppers, beetles, and the like, he gobbles them up by the thousand, besides carrying many more to his young ones in the nest. Altogether, he is a most useful little fellow, and like all the titmice renders

BIRDS THAT SEEK THE WOODLAND SHADE

us good service by destroying untold numbers of insect pests.

The two little tomtits make their nests in a hollow, just as the chickadees do; and they usually take possession of a ready-made hole that has been hollowed out and deserted by a woodpecker. Grasses and moss, strips of bark, feathers, and hair are all stuffed into the hole in the tree to

filled in; then they work downward to the ground floor.

When the outside of the house is finished the little builders keep popping in through the doorway carrying little bundles of moss and fiber

to strengthen the walls on the inside. And lastly the birds collect large quantities of feathers and pile them up at the bottom of the nest.

Bush tits do not all work in exactly the same way. In some parts of Oregon, where the moss sometimes hangs down in festoons from the branches of the hemlock trees, the clever little birds will often weave some of the long streamers into the walls of their nest. Or, if there are no twigs to suit them as rafters for their roof, they may swing their pocket-nest from the branch of a tree at the end of a strap woven with strong fibers.

The bush tits are modest little birds plainly dressed in browns and grays, with never a speck of bright color about them. But they are such cheery, friendly

fellows that no one can help liking them. They love company, and when their family cares are over for the year they gather together in flocks and go merrily careering through the woods, bobbing through the air, one after another, bustling about the trees, all twittering and chattering in the most sociable way.

Much more bashful and retiring in its ways is the wood peewee, a soberly-clad olive and gray bird with white bars on its wings. It loves the quiet shade of thick woods and forests, although it will sometimes build its nest in an old orchard. Throughout the day, but more especially

Photos by Nature Magazine

The bridled titmouse above lives in the southwestern part of the United States. Below is the closely related tufted titmouse, who spends the year with us. She is a stylish little bird.

make a good bed for the baby tomtits. A pair of these bold little birds have actually been seen trying to pull hairs from a red squirrel's tail to add to their collection.

The wee bush tit is not content with a simple nest of this kind. With the help of his tiny wife he constructs a large and elaborate mansion some ten or twelve inches deep from floor to ceiling. It is shaped like a long, hanging pocket, with a hole in one side, near the top, for a doorway.

How Bush Tits Build Their Houses

Instead of laying the foundation of their home and building upward in the usual way, the bush tits start work on the roof of the house. Using as rafters a few small twigs growing on the bough of a tree, they weave a mass of moss and lichen and tough fibers round them until the open spaces are all



BIRDS THAT SEEK THE WOODLAND SHADE

towards evening, its plaintive cry—"pee-o-wee, pee-o!"—sounds softly through the leafy thickets among which it hides. But if you want to hear what this quiet little bird can really do in the musical way, you must get up and go out into the woods before sunrise on a fine summer's morning.

For then, just at day-break, the peewee sings a wonderfully sweet and beautiful little song called "the twilight song."

Few ears—except those of its own gentle little mate—are ever privileged to hear these lovely notes.

The peewee is one of the flycatchers. We shall meet several of his relatives by the streams and lakes, as well as in more open wooded country.

One of the most beautiful of all northern forest birds is the scarlet tanager (tăn'â-jēr), who in his summer suit of black and brightest scarlet flashes through the thick foliage of the tall maples and beeches in the hardwood forests high above your head. This bright bird is not a very accomplished singer. His voice is usually considered somewhat harsh,

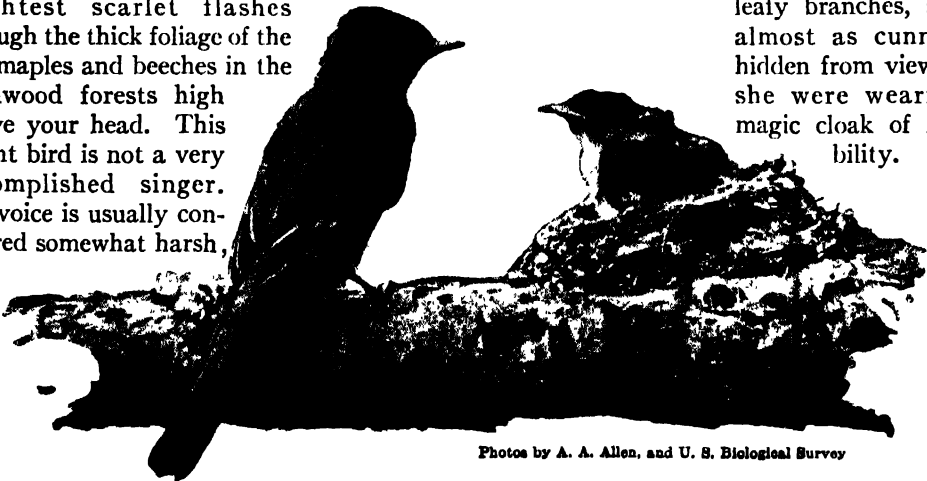
and his short, "chip-churr," which he repeats over and over again, is

simple call—"chip-churr"—peats over and over rather monotonous. But the tanager does his part to swell the joyful chorus of woodland birds, and his real song is somewhat robinlike—that is, like the song of a robin that is in a hurry and has a cold.

Like many other woodland birds the scarlet tanager does not object to human society, and frequently leaves the deep woods to build his nest in an orchard or in a thicket by the wayside, where we have a better chance of admiring his bright plumage and listening to his "chip-churr" or to his buzzy song.

The lady tanager boasts no scarlet feathers. She is quietly dressed in olive-green and yellow, and when she sits on her shallow and rather untidy nest of twigs and rootlets, surrounded by leafy branches, she is almost as cunningly hidden from view as if she were wearing a magic cloak of invisibility.

The male scarlet tanager, above, is one of the most beautiful birds we know. But alas, his song does not equal the brilliance of his coat. Below is the melancholy wood peewee with her young. Her song is a plaintive utterance of her name.



Photos by A. A. Allen, and U. S. Biological Survey

The STORY of BIRDS

Reading Unit No. 8

THE LIVELY WOODPECKER TRIBE

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

How the woodpecker earns a living, 4-66-67
How woodpeckers climb tree trunks, 4-66-67
The life of a downy woodpecker, 4-67-68
A woodpecker as large as a crow,

4-69
The red-headed woodpecker, 4-69-71
The friendly flicker, 4-71-73
How the sapsucker hurts trees, 4-73

Things to Think About

Why do woodpeckers hammer at trees?
How can woodpeckers climb trees?
How do the tongue and beak of a woodpecker work?
In what kind of homes do woodpeckers live?

How do woodpeckers get food during the winter?
Why does the hairy woodpecker sometimes drum on trees?
What woodpecker saves food for hard times?
Why is it unwise to kill a woodpecker?

Picture Hunt

For what purpose does the woodpecker use his tail? 4-66, 67, 68
How can you attract woodpeckers in winter? 4-68
There are three woodpeckers in the color plate opp. p. 4-72.
Can you name them?

How does the downy compare with the pileated woodpecker in size? 4-70
What are the sapsuckers doing to the tree? 4-73
How would you describe a downy woodpecker? Frontispiece, Volume 4

Leisure-time Activities

PROJECT NO. 1: Watch a woodpecker at work. What does he do?

PROJECT NO. 2: Locate a family of flickers in a tree. Study their home life.

Summary Statement

The woodpeckers devour insects that live on trees. They are adapted to tree life by their stiff tail feathers, which prop the bird against the bark, and by

their strong claws, which cling to the bark. Their powerful heads and beaks act like a riveting machine.

THE LIVELY WOODPECKER TRIBE

The red-headed woodpecker spends his time helping us by eating insects destructive to trees. He uses his tail just as does the chimney swift, to whom we have been introduced on an earlier page.



Photo by American Museum of Natural History

The LIVELY WOODPECKER TRIBE

*Whenever You Hear the Woodpecker Beating His Sharp Tattoo,
You May Know That He Is Searching Energetically for the
Grubs That Destroy Our Trees*

TAP! TAP! TAP! Do you hear that rapping echo through the woodland glade? Let us go and see who it is that is working away so busily. There is no one in sight under the trees. But step quietly. Look upward. Ah! There is the woodsman, halfway up the trunk of an old oak tree. It is the little downy woodpecker, and luckily he has not heard or seen us as yet.

Watch him as he clings with his strong hooked claws to the rough bark of the tree, pressing his stiff tail feathers firmly against the tree trunk, to give him extra support while he swings his head backward and forward, using his stout bill as a pickaxe.

But there! He has spied us. With a loud, laughing "he, he, he, hay, hay, hay, hay, ha!" the little woodsman darts away to another tree at the farther end of the glade, where he soon starts his tap, tap, tapping again.

The woodpecker is not merely amusing himself as he hammers away at the tree trunk, sending a shower of chips flying in all

directions. He is working for his living. Tucked away here and there in the cracks and crannies in the bark are little clusters of eggs laid by moths and wood-boring beetles. Our busy little friend greatly enjoys these for breakfast or supper. All kinds of little beetles and other wily insect folk are hiding in the chinks, while right under the bark many a fat grub is living in secret in a gallery which it has tunneled in the living wood of the tree with its hard, horny jaws. It is the woodpecker's business to hunt out and destroy these troublesome creatures that do so much harm to our forest and orchard trees.

Woodpeckers are climbing, not perching, birds. Two of their strong clawed toes—the second and third—are turned forward, and two—the first and the fourth—are turned backward. This arrangement makes it easier for the birds to climb up trees, and to grip the bark firmly while they are working. There are, however, some woodpeckers that have only three toes, and these birds seem

THE LIVELY WOODPECKER TRIBE

to manage almost as well as their four-toed relatives.

All true woodpeckers have very strong, stiff tail feathers, which they press against the rough bark while they are hammering. This makes it much easier for the birds to hold tight to the straight tree trunk.

Most useful of all is the woodpecker's beak. It is a first-class carpenter's tool, wedge-shaped, with a sharp, cutting edge. It can be used as an axe to splinter the bark under which insects are taking cover, or as a chisel to chip out holes in decaying trees to make nurseries for woodpecker babies, or cozy bedrooms to sleep in when nights are chilly.

Besides his strong, handy beak the woodpecker has a remarkable tongue. It is very long, rounded, and either sticky or fitted with a horny tip armed with sharp prickly barbs. This tongue darts in and out of the bird's beak quick as a flash, scooping insect eggs out of cracks and spearing insects in the holes where they are "playing 'possum."

The downy is the smallest and one of the best-known of all American woodpeckers. He is hardly bigger than an English sparrow, but is much more striking in his smart suit of black and white, with his bright red patch on the back of his head.

Cheerful and Busy Downy

Although he is a quiet, modest little bird, Downy is always cheerful, always contented, always busy. He works, too, in the most methodical way. Starting near the base of a tree trunk he climbs steadily upward, moving round the tree in a spiral. Here and

there he pauses to scoop a few eggs out of cracks, or to give a sharp rap on the bark with his beak. He can tell from the sound when an insect is lurking below, and as soon as he has discovered one the little woodpecker sets to work with a right good will. Bang! bang! bang! he goes with his pickaxe until he has broken through the

bark and is able to dig the cunning insect out of its home. In vain the fat beetle grub tries to wriggle away to the dark end of its burrow. Out flashes Downy's tongue, the insect is speared, and disappears down the bird's dark throat.

This little woodpecker is seldom found in the heart of a dark wood. He is a sociable little person, fond of company, and likes to live in an open glade, on the edge of the wood, or even in an orchard where he is sure to have plenty of neighbors. The female downy is like her mate white back, white breast, black and white tail feathers, black wings spotted with white, and a black and white cap. But she lacks the crimson patch at the back of the head, so you can easily tell which is the male and which the female.

They are a very devoted little couple; and except, of course, that the female lays the eggs, they share and share alike in the work of preparing their nursery and bringing up the little woodpeckers.

These industrious birds are not content with a ready-made apartment. They dig one out for themselves, choosing a dead or decaying limb on an old tree, as a rule, because it is easier to hollow out. They hammer and chisel away at the wood with their natural pickaxes until they have made a fairly deep hole, and when all is ready, down



Photo by A. A. Allen

Here are seven inches of fine citizenship. The industrious little downy woodpecker has stopped digging for a harmful borer just long enough for us to see him.

THE LIVELY WOODPECKER TRIBE

at the bottom on a heap of fine chips the female lays four or five glossy white eggs. All woodpeckers and nearly all other birds that make their nests in holes lay white eggs, for as they are so well hidden out of sight, colored or speckled shells are unnecessary.

Every year downy woodpeckers, and all the other woodpeckers, make a new nest for their little ones. And every year, when summer is over, each woodpecker chisels out a fresh bedroom high up in an old tree, where it passes the winter nights and the best part of the day too when the weather is very cold or wet. So, scattered here and there in woods, like apartments to let, there are almost always numbers of deserted woodpeckers' nests which makes comfortable homes for tits and chickadees and many other birds who like to make their nests in whatever ready-made holes they can find in the trees.

Woodpeckers are not great travelers. Like the titmice and other resident birds they stay in North America all the year round; so when winter comes we do not lose the little downy woodpecker. We may still hear his tapping in the woodland glades and see him bustling about the leafless trees in search of food, in company with a bunch of merry little chickadees and tufted titmice. There are still insect eggs to be found in the cracks of the trees, and sleeping insects hidden under the bark, waiting for the spring sunshine to wake them to life again. The scattered berries and seeds still to be found on the trees and plants all help to keep hunger at bay; the downy woodpecker has a hearty appetite and is not fussy about his food. He will even come, in hard times, to our bird table and help himself

to the good things provided for hungry birds; and he greatly enjoys pecking at a piece of suet which thoughtful friends have fastened to a tree as a special treat at Christmas time.

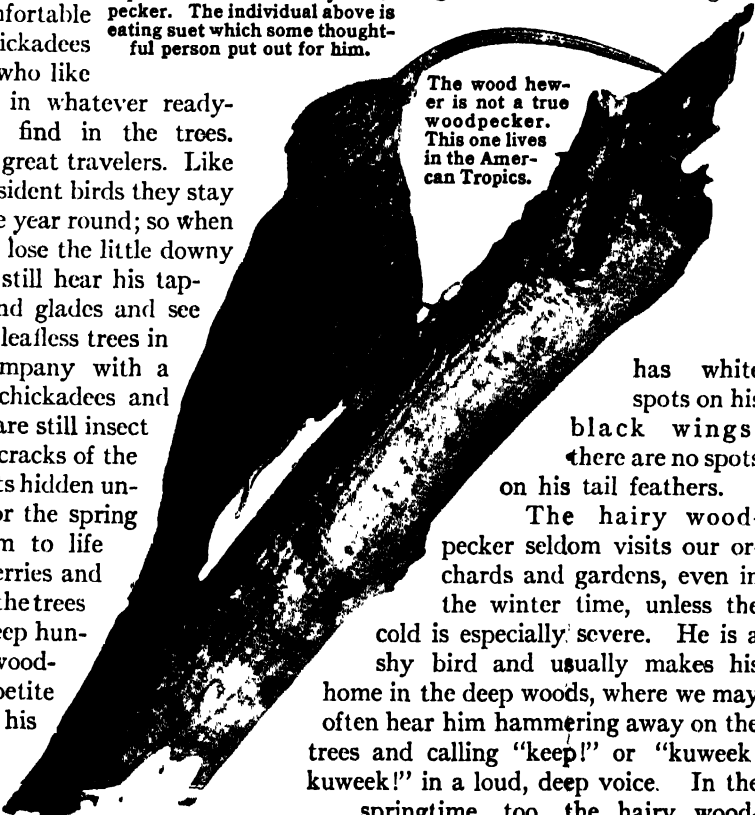
Not quite so friendly in his ways is the hairy woodpecker, another resident North American bird who, like the downy woodpecker, makes his home in the green woods in most of the United States and Canada all the year round.

The hairy woodpecker is so much like his downy cousin that people often confuse the two birds one with another. The hairy woodpecker has the same black and white plumage and the same jaunty red patch on the back of his head, but he is a bigger bird, quite as big as a robin. And although he



Photo by A. A. Allen

The hairy woodpecker is a large reproduction of the downy woodpecker. The individual above is eating suet which some thoughtful person put out for him.



The wood hewer is not a true woodpecker. This one lives in the American Tropics.

has white spots on his black wings, there are no spots on his tail feathers.

The hairy woodpecker seldom visits our orchards and gardens, even in the winter time, unless the cold is especially severe. He is a shy bird and usually makes his home in the deep woods, where we may often hear him hammering away on the trees and calling "keep!" or "kuweek! kuweek!" in a loud, deep voice. In the springtime, too, the hairy wood-

Photo by American Museum of Natural History

THE LIVELY WOODPECKER TRIBE

pecker—like all the rest of the family—is fond of “drumming” on the trees, either to attract the attention of the lady he is courting or to broadcast messages to other woodpeckers living in the wood. When performing in this way the bird beats a regular tattoo on the tree. Faster and faster fall the strokes of his beak until the tap-taps blend together in a single continuous sound, like the roll of a drum, that can be heard far away.

Woodpeckers as a rule are more often heard than seen. For although many are fine big birds, so strikingly arrayed one would think it impossible to overlook them, they nearly always manage to be “on the other side of the tree”; and their drumming or tapping echoes through the woods in such a way that it is by no means easy to say where the sound is coming from.

The great ivory-billed woodpecker that at one time was common in the southern states is the giant of his family. But sad to say, this splendid bird is now so very rare that before many more years have passed it will probably become extinct. Then the honor of being the largest American woodpecker will pass to the handsome pileated (*pī'lē-āt'ēd*) woodpecker that ranges throughout the great forests and wooded swamps in most of the Eastern United States, as well as in British Columbia, Quebec, and Newfoundland.

A Woodpecker as Big as a Crow

This fellow is as big as a crow—that is to say, seventeen or eighteen inches long from bill tip to tail tip, and about twenty-seven inches or so across the wings when they are expanded. He is almost as black as a crow, too. At least his back, breast, and tail are black. But he has white patches under his wings—to be seen plainly as he flies—and a broad white line runs from his bill down the side of his neck. A bright scarlet crest adorns the top of his head and gives him his name, which means “crested.” The male

pileated woodpecker has a patch of red on his cheek as well; but his mate, who is like him in other respects, has a pale complexion, and her red crest is not quite so big and imposing.

As you would expect, this big, strong bird is one of the most expert woodcutters to be found in the forest glades. With his sharp, powerful beak he hammers away with such energy that he sends chips of wood as big as your hand flying in all directions, and hews out a deep hole in a dead tree in a surprisingly short time; and his wife is quite as energetic as he is.

Pileated woodpeckers are very noisy birds. You may hear them calling “cack-cack-cack” or shouting “ho-ho-ho-ho” to one another as they fly about the woods. Then two or three birds sometimes hold a meeting on a tree trunk, when they all talk at once, making such a noise with their “wick-wick-wick! wick-y-up, wick-y-up!” that it sounds as if they were quarreling—as may very well be the case.

Although he is not much more than half the size of the pileated woodpecker, the red-headed woodpecker is even handsomer. Like so many of his family he is dressed in black, white, and red; but instead of having quite a patch or a crest of red on his crown, he wears a bright crimson hood completely covering his head and shoulders. Young red-heads have gray hoods until they are quite grown up.

In his ways the red-head is not quite like other woodpeckers. True, he loves the green woods, but he is just as often seen on the trees or even on a fence by the wayside. In the usual woodpecker fashion he and his wife chisel holes in decaying trees as nurseries for their young or bedrooms for themselves. They splinter the bark, too, to get at the insects hiding there, but they will stop their hammering to dash after a beetle, or moth, or maybe a wasp on the wing, just as the

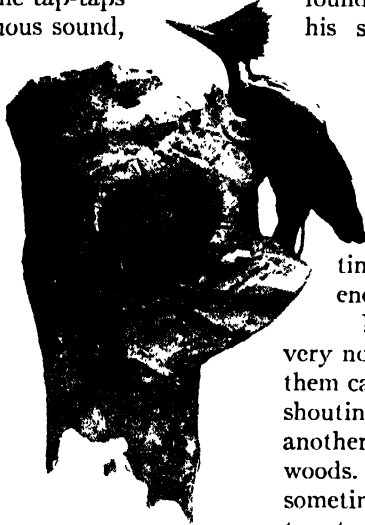


Photo by American Museum of Natural History

This stately Mexican woodpecker resembles our own pileated woodpecker. Notice his serviceable bill, which ought to strike terror to the heart of any insect borer.

THE LIVELY WOODPECKER TRIBE

nimble little flycatchers do. Then down they will drop to the ground to pick up an ant or a grasshopper.

But a diet of fruit and nuts suits the red-head quite as well as insect fare. It is said he helps himself rather too freely to the fruit in the orchards, though actually the fruit he takes is more than paid for by the quantity of insect pests he destroys. And if a few elderberry, mulberry, chokecherry, or wild black-cherry trees are planted in the orchard for his benefit, Master Red-head will do but little harm to the more valuable fruit.

The red-head is almost as lively in his ways as the downy woodpecker. In the early spring-time, before settling down in earnest to the serious business of providing for a nurseryful of young woodpeckers, he and his mate frolic about in the trees as if they were playing hide-and-seek, and amuse themselves by beating tattoos on hollow branches or on the roof of a house or barn to work off their high spirits.

When the Red-heads Go Nutting

In the autumn, when the children are all out in the world, and able to shift for themselves, the red-heads go nutting in the woods. They like beechnuts best of all; and, before the leaves have fallen, the birds have a glorious time climbing about the heavily laden trees, picking and husking the tender green nuts. When the crop of nuts is unusually good the red-heads have a royal time, feasting away from morning to night. And not only do they crack and eat the nuts on the spot, but they collect quantities and store them away for the winter in little holes and

cracks in dead tree tops—sometimes even hammering loose fragments of bark over their treasures to keep them hidden from thieving birds and beasts.

Acorns, seeds, and even grasshoppers are often stored up in the same way by these provident birds.

The California woodpecker, who is first cousin to the northern red-head, provides for hard times in the same thoughtful fashion. As soon as the acorns are ripe the knowing bird starts harvesting them, and he sometimes conceals several hundreds in the trunk and branches of a single tree.

But this woodpecker is not quite so wise as he at first appears to be, for sometimes, in his excitement, he picks up a pebble instead of an acorn, and rams that into a hole.

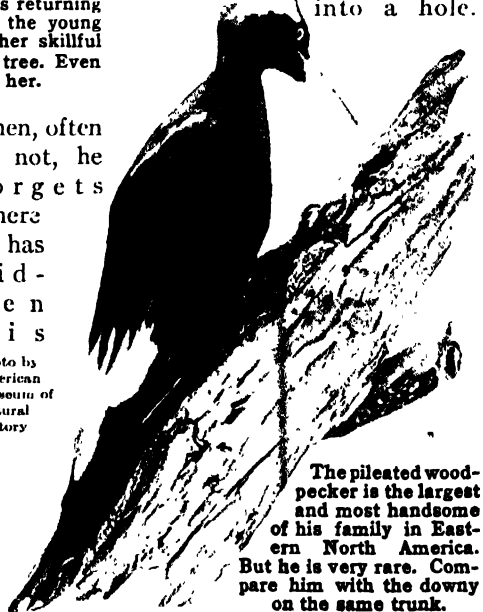


Photo by A. A. Allen

A mother red-head is returning home with food for the young red-heads. Notice her skillful way of holding to the tree. Even a fly might envy her.

Then, often as not, he forgets where he has hidden his

Photo by American Museum of Natural History



The pileated woodpecker is the largest and most handsome of his family in Eastern North America. But he is very rare. Compare him with the downy on the same trunk.

THE LIVELY WOODPECKER TRIBE

treasure, and all the acorns and nuts are found and eaten by squirrels and climbing rats.

It is hard to say whether the red-headed woodpecker of the north is as absent-minded as his California cousin; it would be interesting to watch and find this out, if you can, whenever you learn that a red-head is spending the winter months in your neighborhood. This bright bird does not mind the cold so long as he has plenty to eat; so when he can find sufficient food to satisfy his hunger he seldom wanders far from his summer home, however severe the winter may be. But when supplies are scanty he generally moves further south until things improve again.

Although he is a true "countryman," now and again a red-head may be seen climbing about the trees in the parks and lawns on the borders of a busy city. But the woodpecker who most often "comes up to town" is the flicker. And since there are very few parts of Eastern North America, from the coast of the Gulf of Mexico to Northern Canada, which the flicker does not honor with his company, there must be very few people who have not made the acquaintance of the friendly little fellow at one time or another.

So long as there are some half-decayed trees about in which he can hammer out a nursery for his young ones, the flicker does not much mind where he lives. He is equally happy in an open forest, a park, an orchard, a clump of trees growing by the wayside, or in a solitary old tree in the middle of a cotton field. He will sometimes make a home for his family in a telegraph post, in a wooden pillar supporting a veranda, or in the weather boarding under the eaves of a house. When he chooses a place of this kind he is not a very welcome guest; for, of course, no one likes a visitor who insists on making holes in the wood on one's property.

The flicker is known by many names—about seventy in all. He is called the "yellow-hammer," the "high-holder," the "golden-winged woodpecker," the "wilcresen," and the "yocker-bird" in different parts of the country. And "Paul Pry" might well be added to the list, for the flicker is a most inquisitive fellow, always poking his beak

into everything. He will fly into barns and empty houses if he finds a window open, and will explore every nook and corner of the premises to see, perhaps, if it would be a nice place to live in. Flickers have on more than one occasion contrived to make their way into a church, through holes which they cut for themselves in the woodwork just under the roof. And when services were being held in the church the bold birds would fly about among the rafters quite unperturbed by the hymns or the sermon.

The flicker is a handsome bird, quite the largest of the common American woodpeckers. His brown, white, and buff feathers are barred and spotted with black; his wings and his tail are lined with yellow; he has a crescent-shaped patch of crimson on the back of his head, and another black one on his breast. He measures some twelve inches from the tip of his beak to the end of his tail.

In his ways the flicker is not quite like other woodpeckers. He picks a beetle, a moth, or fly from the tree trunk if it happens to catch his eye; but when he is hungry he is mostly to be found hopping about the ground, hunting for insects in the grass or among fallen leaves. Ants are his favorite fare, and the flicker spends most of his time tearing open the hills made by these industrious insects. He

The flicker is very fond of ants, which he catches on the ground, an unusual habit among woodpeckers. If you flush him the snow-white patch on the rump will tell you at once that this is the "golden thrush."

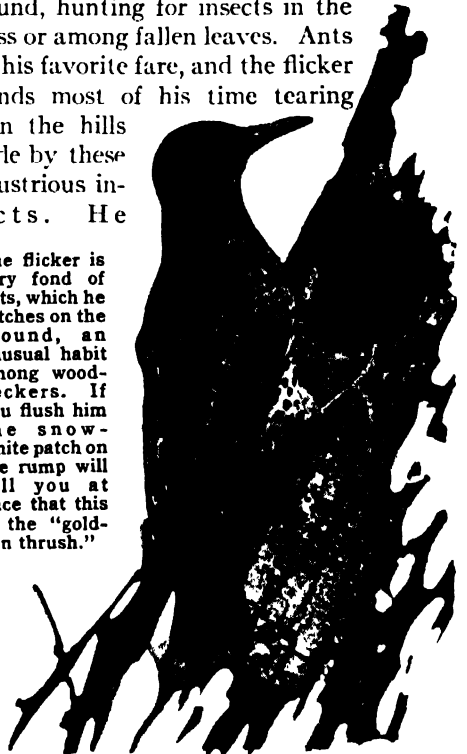


Photo by American Museum of Natural History

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flicks them up with his long sticky tongue as they come tumbling through the breach in their city walls to find out what is the matter!

The red-shafted flicker of Western North America is quite as bright and bold a bird as his cousin of the central and eastern states. He, too, is especially fond of ants, and does good work in gobbling up large quantities of the little insect folk that in some parts of the country would overrun the land if they were allowed to have their own way. Like many other woodpeckers he varies his diet of insects with berries, acorns, and wild fruits. Wild grapes are an especial treat to the flickers in New Mexico. They often help themselves to corn, too, when they find it drying on the roofs of Pueblo Indian houses.

The red-shafted flicker has red feathers under his wings and tail and a red patch on the side of his cheek; otherwise he is dressed in brown, white, and black like his cousin the common flicker. He is a friendly, lively, and rather a noisy bird, and he does not care very much where he makes his home. He will live happily in a wood or a grove, drilling out his nursery or his sleeping apartment in any kind of tree where the wood is not too hard. But a fence post, a telephone pole, or a hole under the eaves of a house suits him just as well, and occasionally a red-shaft will dig himself a cave in a sandy bank, just as kingfishers do.

When a Flicker Goes Courting

Wherever he chooses to establish himself the Western flicker is a jolly companion. He drums and shouts for joy in springtime when he is courting his mate, calling "flicker, flicker, flicker. We-eo-we-oo, wickety-wick," and the happy pair bow to each other and bob and dance and chuckle in the funniest way imaginable.

Another interesting Westerner is Lewis's woodpecker, sometimes called the crow woodpecker or the black woodpecker. He is not really black, but a dark iridescent green color, with a red breast, red cheeks, and a grayish-white cravat. At first sight you would hardly recognize the bird as one of the woodpecker family. In the first place, he flies straight forward, flapping his wings as a crow does instead of in the usual waving, up-and-down, woodpecker fashion.

Then instead of digging insects out of old trees he will sit up in the tree tops or on a post and dart at passing flies and moths, like a fly-catcher; and he sometimes perches crosswise on a branch just like a perching bird, instead of clinging with his claws to the tree as ordinary woodpeckers do.

But Lewis's woodpecker lives in a hole in the stump of an old tree, and brings up his little ones there as other woodpeckers do; and like the red-head and his California cousin, he sometimes hides acorns, nuts, and insects in nooks and crannies in the trees.

There are many other woodpeckers both in the East and West of North America. They are all interesting, and for the most part they are useful birds. The flickers, to be sure, often make themselves unpopular when they make holes in things they might better leave alone, but the birds seldom harm trees in the woodlands or orchards, since they almost always choose dead stumps or boughs for their carpentry work.

How the Flickers Do Us a Good Turn

When they chop away bits of bark from the trees with their pickaxes, the friendly little woodsmen are really doing us a good turn by killing the hidden grubs that are feeding on the wood below. The small holes they drill do little harm to the trees, since the birds seldom penetrate the true wood



Photo by Cordelia J. Stanwood

Our flicker is holding to the nesting tree for dear life. Not having flown before, she does not have the self-confidence to abandon herself to space.

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with their beaks in their search for food. So it is foolish as well as cruel to kill these beautiful birds.

But the sapsucker is not so blameless. He taps the trees, not for the sake of the injurious insects hiding beneath the outer bark, but to get at the sap that flows through the living wood below the inner layer. With his sharp, pointed beak this naughty little woodpecker drills a number of deep holes close together right through the soft inner bark. Then when the sap begins to flow from the wounded tree, he clings to the tree trunk feasting to his heart's content on the sweet, trickling stream.

This, of course, is very bad for the trees. The apple orchards in Washington and the English-walnut groves in California are sometimes severely damaged by these sap-sucking birds. Fortunately, in their natural homes in the northern forests the sapsuckers do very little harm by their boring operations—not nearly so much as a careless camper often does by throwing down a lighted match or a cigarette end, which may start a fire and burn not only acres of beautiful trees but hundreds of woodland birds and beasts as well. So we must not be too hard on the sapsuckers.

Like his more useful relatives, the sapsucker does destroy a great many injurious

insects. Many a fly and beetle, ant, moth, or midge that comes flying or creeping up to share in the rich feast of sap, disappears in a trice down the woodpecker's throat. In the springtime, too, the young sapsuckers

are fed almost entirely on insect food, like other baby birds. But as soon as they are old enough to fly, their parents take the children to the "sap fountain," where they lap up the sweet, oozing fluid and have a fine treat!

The common sapsucker is a pretty black and white bird with a scarlet cap, a scarlet throat, and a pale yellow waistcoat. He is not quite so big as a robin, and his tongue, instead of being very long and armed with barbs, like an ordinary woodpecker's, is rather short and has a fringe of stiff hairs at its tip. This makes a handy little brush for the sapsucker,

and with it he mops up the sap as fast as it trickles from the holes he has bored.

The Female Sapsucker's Costume

The female sapsucker has a white throat, but otherwise she is just like her mate; and the young ones in their first plumage are dingy-looking little birds with never a speck of red.

These woodpeckers pass the winter down south, from the Ohio Valley to Central America. In the spring they start for the north again, traveling by easy stages.



Photo by An _____ an Museum of Natural History

High up in the American Rockies these beautiful Williamson's sapsuckers nest and live. They are shown here in the act of sucking sap from a tree—for which they are notorious. They often do a great deal of damage to trees in this way.

The STORY of BIRDS

Reading Unit

No. 9

STRANGE VOICES IN THE GREENWOOD

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

The cuckoo bird and its habits, 4-75-76
The whippoorwill, a night hunter, 4-76-78
How whippoorwills protect their young, 4-77

The ruffed grouse and its family, 4-78-79
The drummers of the woods, 4-79
The gorgeous wood duck and its habits, 4-79-80
The mourning dove, 4-80

Things to Think About

What troublesome insect is attacked by the cuckoo?
When does the whippoorwill hunt its food?
In what remarkable way does a whippoorwill defend her young?
Of what advantage to game birds

is their ability to run around as soon as they are hatched?
Why is the ruffed grouse often heard drumming?
How do baby wood ducks get to water from their tree nests?
To what use have doves been put by man?

Picture Hunt

What food does the cuckoo prefer? 4-75
What birds show excellent protective coloration? 4-76
Which is the largest pigeon in the world? 4-77
What has been the fate of wood

ducks? 4-78
From what bird did all our varieties of pigeons come? 4-79
How have we treated the lovely mourning doves in this country? 4-80

Leisure-time Activities

PROJECT NO. 1: Try to locate a whippoorwill after hearing its call.

PROJECT NO. 2: Learn to recognize at least ten kinds of domestic pigeons.

Summary Statement

The yellow-billed cuckoo is one of our most useful birds because he eats tent caterpillars—hairy insects which are shunned by other birds. Another insect eater is the shy whippoorwill, which is heard only at night, repeating its weird cry many times in quick

succession. Its nest is hard to find. The whippoorwill is so colored that it is invisible against the forest floor. Both the whippoorwill and the ruffed grouse mother birds act as if their wings were broken when an intruder comes near.

STRANGE VOICES IN THE GREENWOOD



Photo by A. A. Allen

The yellow-billed cuckoo is often called the rain crow because of its supposed ability to predict rain. Its only makeshift for a song is a guttural note. But though it is a poor musician, it is of great use in destroying tent caterpillars.

STRANGE VOICES *in the* GREENWOOD

Have You Heard the Cuckoo's Mournful Cry and the Midnight Call of the Whippoorwill? And Have You Ever Been Urgently Told to "Chuck Will's Widow"?

ON A bright day in early summer, when the woodpeckers are hammering and drumming and all the little singing birds are singing their best, you may hear, if you listen carefully, a strange, mournful cry echoing through the trees in the woodland glade. Hark! There it is again. "Kuka-kuk! Kuka-kuk! Kuka-kuk!" Follow the sound and there, sitting alone on the branch of a tree, you will find a sad-looking bird repeating its strange cry—"Kuka-kuk! Kuka-kuk!"—over and over again, giving a funny little jerk every time it says "kuk," as if it were suffering from hiccups.

This is the yellow-billed cuckoo, a slender brown bird about the size of a robin, with a long, curved beak and a long tail. His breast is white, and his long tail feathers are marked with large white spots; and the upper half of his beak is black and the lower half yellow. That is why the bird is called the yellow-billed cuckoo, to distinguish him from his black-billed cousin who is very like him in other respects.

You will notice that the bird has very short legs and that he grasps his perch in a curious way, with two toes turned forward and two backward. His feet, in fact, are more like those of a woodpecker and not like the feet of perching birds, which have three toes pointing forward and one behind.

Probably the cuckoo is not so unhappy as he seems to be. It is doubtless quite safe to say that he is not. But his habit of sitting motionless for a long time, calling sadly, "Kuka-kuk! Kuka-kuk! Kuka-kuk!" or sometimes, "*Tut-tut, tut-tut,*" certainly makes him seem very gloomy.

All through the summer the strange bird keeps up his mournful cry, often repeating his monotonous remarks a hundred times and more without stopping. Even on dull cloudy days, when most birds are silent, the cuckoo still uplifts his voice; and from this peculiarity he is often called the "rain crow," although there is nothing crowlike about him.

The cuckoo usually makes his home in a dark thicket, though he sometimes visits

STRANGE VOICES IN THE GREENWOOD



Photo by A. A. Allen

The Florida nighthawk, above, and the whippoorwill, below, show how birds may blend with their surroundings. This protective coloration enables birds

to escape their enemies and come upon their prey unnoticed. Evidently the birds know this, for they let one come quite near.

orchards or the shade trees along a quiet country road, but he is seldom heard or seen in a pine wood. He is a useful bird, for he has a great weakness for the troublesome hairy caterpillars—called “tent caterpillars”—that live together by the hundred in large webs among the branches of fruit trees. At night these caterpillars leave their tents and devour the foliage of the trees; then they go back home to bed in the early hours of the morning. Most birds refuse to touch the hairy things, but the cuckoo thoroughly enjoys them.

He tears open their tents and gobbles them up by the hundred, and the prickly caterpillars seem to agree with him very well. He eats grasshoppers and cicadas, too, as well as wasps, beetles, ants, bugs, and spiders. So the cuckoo does his best to keep down the insect population.

The cuckoo's nest is a very rough kind of cradle. It is a mere platform of twigs, so loosely put together that you can often see the green-blue eggs through the open spaces in the floor, if you stand beneath it. We may find it in a tree in a woodland grove or in the thick, tangled vines overgrowing

the hedges along a stream or wayside; we may even come across it in an old orchard occasionally.

Although it is a very poor attempt at nest building, a female yellow-bill does her best to provide a nursery for her babies—which is

more than the European cuckoo does. For this unnatural bird slyly pops its eggs into the nests of other birds and then off she goes to enjoy herself, leaving the hatching and rearing of her babies to foster parents.

In autumn the cuckoos say good-bye to their summer

homes in the eastern and central states and fly away to South America, and then the mournful “Kuka-kuk!” is heard no more till spring comes round again.

Another shy woodland bird more often heard than seen is the whippoorwill. Indeed in the daytime, unless you come upon him unawares, you will neither see nor hear this strange, mysterious bird; for like the owl, the whippoorwill turns night into day. From early dawn until late in the evening he stays quietly at home in a dark thicket, resting on the ground upon a bed of fallen leaves. There the bird's mottled plumage of brown,

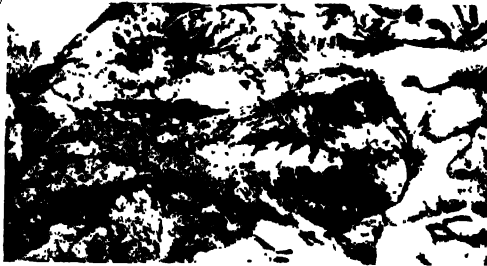


Photo by A. A. Allen

If you had not been told that there was a whippoorwill in this picture, do you think you would have been likely to notice him?

STRANGE VOICES IN THE GREENWOOD

buff, and white is so like the coloring of the dead leaves among which he lies that you would never discover his hiding place unless, startled by your footsteps, he rises from his bed and slips quickly away into the shadows.

But when the light has faded from the sky, the whippoorwill leaves his secret haunts and flies about the woods, and the fields and lanes and orchards in the vicinity. All through the night he hunts the insects that do so much harm to the farmer's crops and destroy the leaves of the fruit trees in the orchards. Then, when he has had a good supper, the bird uplifts his voice; and as you

lie comfortably in your bed, you may hear his plaintive cry—"whip-poor-will!"—ringing through the darkness.

Over and over again, often two or three hundred times in succession, does this strange bird ask you to whip poor Will—though who poor Will is, and why he should be so unkindly treated, no one will ever know.

The whippoorwill is one of the "goatsuckers." This is a very foolish name, for of course he does not suck goats; neither does his cousin,

the chuck-will's-widow of the southern states, nor the nighthawk, who also belong to the goatsucker bird family. They are really most useful birds. They kill large

quantities of destructive insects, they do not steal fruit or grain, and they never harm goats or any other animals. Yet the poor whippoorwill is often disliked by superstitious country folk, who foolishly believe that this friendly, gentle bird will bring them "bad luck" if it comes too near the house when it utters its strange cry.

The whippoorwill makes no nest. The mother bird simply lays her pale spotted eggs on a bed of dead

leaves on the floor of the wood. The baby birds are not naked when they are hatched, but covered with soft down. And these fluffy coats are so near the color of the faded leaves on the ground, and the wee birds lie so still when their mother is away from home, that you would never notice them even though the little birds were lying just at your feet. But if a mother whippoorwill is at home when you approach her nesting place, she will at once flutter off as if she

had a broken wing—trying in this clever way to attract your attention and lead you away

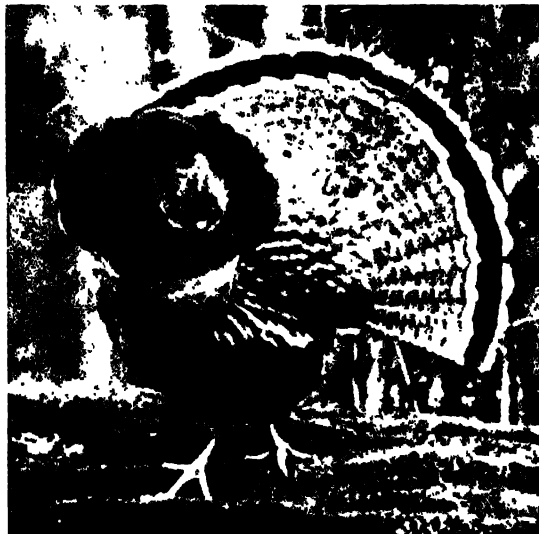


Photo by A. A. Allen

Early some spring morning this ruffed grouse mounts the drumming log to display his fine plumage to the lady of his heart. He goes through a number of queer antics and makes a dull thumping noise with his tail on the fallen tree. At times he will jump high in the air. How could any ruffed grouse resist such a suitor?

This crowned pigeon from the Solomon Islands is the largest of his kind, measuring nearly three feet in length. Even with those strange plumes he resembles the pigeon of the city barnyard.



Photo by N. Y. Zoological Society

STRANGE VOICES IN THE GREENWOOD

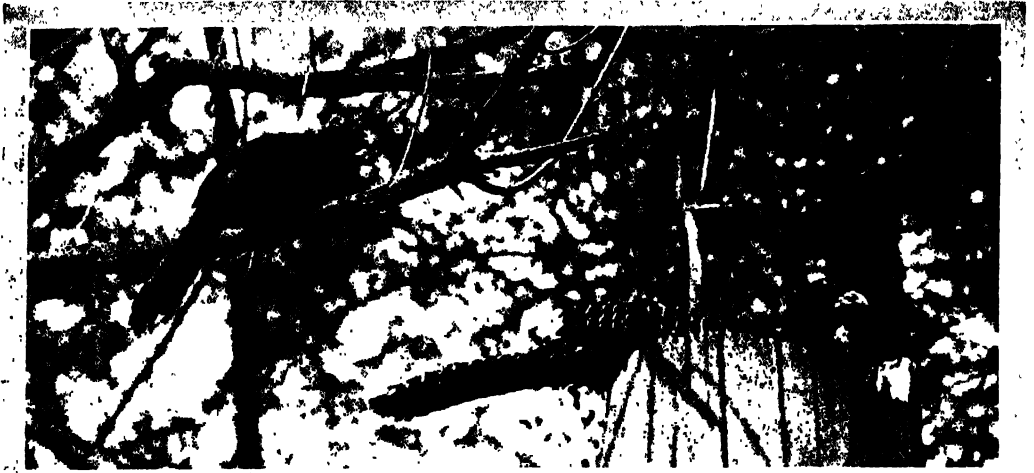


Photo by N. Y. Zoological Society

The banded curassow is found in the jungles of South America; but it has been taken to Holland, where the birds must find their lives a good deal changed! The

mother is here shown sitting on her nest, built in a stump, and the cock is perched near with his eye out for dangerous prowlers. These birds are easily tamed.

from her eggs or her precious children.

The whippoorwill and his relatives have short legs and weak feet, so they do not move very gracefully when they are walking about the ground. They seldom perch, as the singing birds do, but usually sit lengthwise on a bough or on the top of a fence rail. Whippoorwills have very short beaks and enormously wide mouths, with a moustache of long, stiff hairs on the upper lip. These moustaches serve the bird as a kind of net for capturing his insect prey and preventing their escape.

In the autumn the whippoorwills flit silently away to the south. When and how they travel we do not know. They just disappear from their northern haunts as mysteriously as they appear in the spring.

Another unselfish parent bird, who, like the whippoorwill, thinks more of her children's safety than of her own, is the ruffed grouse. If you should chance to meet a female grouse taking a walk in the woods with her large brood of tiny mottled chicks, she may

rise with a tremendous whirring of wings, or she may flutter away close to the ground, as if she had a broken wing or a lame leg. While she is acting in this way, hoping to trick you into following her, all the wee

chicks crouch upon the ground; there, among the dead leaves, the sharpest eyes would fail to see them. The cunning little creatures lie perfectly still until mother calls to them that all danger

is past. Then up they jump, maybe ten or fifteen of them, and run to meet her as fast as their sturdy little legs will carry them.

The ruffed grouse is one of the "game birds"—a distin-

guished order of feathered folk to which the pheasants, partridges, quails, turkeys, and farmyard fowls also belong. They are all sturdy, robust birds, with strong legs and toes—fitted for walking and running—and stout, blunt claws with which they sometimes scratch up the ground when they are hunting for food. Game birds live chiefly on seeds, grain, and berries, though they will pick up an insect or swallow a wriggling worm with



Photo by U. S. Biological Bureau

The guns of sportsmen have driven this beautiful wood duck from all but thinly populated districts. Her nest is placed high up in a hollow tree.

STRANGE VOICES IN THE GREENWOOD

great enjoyment; and they are fond of pecking at ripe fruit when it falls to the ground.

Young game birds are most sprightly little creatures. Instead of coming into the world blind and helpless, like baby song birds, they are wide awake as soon as they are hatched, and already clothed in fluffy suits of softest



down. The chicks are able to run about almost at once as soon as their feathers are dry in fact—and are ready to “follow mother to market” and even to find food for themselves before they are a day old.

The male grouse, who is a very fine fellow with a large ruff of iridescent black feathers round his neck, takes no interest in the welfare of his children; but this is really not necessary, since from the first the independent little ruffed chicks are quite capable of trotting about and finding food for themselves.

The Drum of the Ruffed Grouse

So the proud cock bird struts through the woods feasting on seeds, berries, and the wild fruits and young nuts as they ripen and fall to the ground. And since the ruffed grouse cannot sing, he amuses himself from time to time by “drumming.”

This drumming is not like the woodpecker's tattoo. The grouse does not tap with his beak on the tree trunks, but standing on a log or an old tree stump, he beats the air with his wings, and so sends a low, rumbling

sound, like distant thunder, resounding through the woods.

It is mostly in the springtime, especially on moonlight nights, that the ruffed grouse gives his drumming entertainment. He does it chiefly to attract the hen birds when he is seeking a mate, or to warn rival cocks that he is not to be trifled with. But he is often heard drumming in autumn, as well.

Ruffed grouse are found in thick woods and swamps and on the steep forest-clad hillsides all through the temperate northern parts of America. They do not go south in the winter, though they often go from place to place in search of food. When the weather is very severe they sometimes surprise you by turning up in farmyards, gardens, and

All of the pigeons shown here are probably descended from the rock dove of Europe. By selective breeding many interesting forms have come into existence. They are, in order: homing pigeon, such as was used in the World Wars; the nutmeg; and last of all the white fan-tailed pigeon.



Photos by N. Y. Zoological Society and Olivier

other unexpected places. But grouse are wonderfully hardy birds. Cold does not worry them. When the snow lies thick upon the ground they will occasionally pass the nights in a snow drift, covered up by a light blanket of freshly fallen snow!

You would hardly expect to meet a duck in the woods, except of course, by a lake or on the banks of a stream. Yet in the spring or summer time you may perhaps see a pair of wood ducks flying over the tree tops or sitting on a bough quite a long distance from the waterside.

The wood duck is also called the summer duck, because it is about the only duck that stays in the southern states in the summer time. In the more northern states and as

STRANGE VOICES IN THE GREENWOOD

far as Hudson Bay it is a summer visitor only.

This little duck is well worth watching, for it is the most gaily clad of all the American wild ducks.

The drake gleams with all the colors of the rainbow, and in addition has a wonderful many-colored crest of long feathers. His mate, the duck, has a smaller crest and is not quite so gorgeous; but she is a pretty bird, and the drake, at least, admires her.

The wood ducks seek the wood in the spring, when the nesting time comes round, and they usually choose a hole at the top of an old stump or high up in a tree trunk for their nursery. There the female lays her eggs and covers them with a blanket of soft feathers which she plucks from her own breast to keep them warm when she goes off to feed, for the drake never helps her hatch them.

When the ducklings are hatched, their parents take them to the nearest lake or rivulet and introduce them to the water. Exactly how they manage to get there is something of a puzzle. It seems too much to expect such tiny, fluffy things to waddle a mile or more over rough, tangled forest ground on their wee webbed feet. And before they can start on this long, tiring journey the ducklings have somehow to take a perilous jump, of perhaps twenty feet or so, from their nesting hole to the ground.

Some say the parent birds carry the ducklings, one by one, in their beaks, and deposit them safely on the ground at the foot of the tree; but others have seen the tiny birds drop boldly from the nest, spreading their

webbed feet and fluttering their wings to break their fall. But whether they jump or are carried to the ground, and whether they walk or ride on the parents'

backs, they do reach the water somehow. There

you may see the happy little ducklings paddling round, keeping close to their proud parents, who call them to order with a warning "cl, uck, cl, uck!"

There are so many beautiful and interesting birds living in woodland borders

that we have not time to make friends with them all, but we must not forget the mourning dove, whose plaintive notes floating through the trees are one of the first sounds of early spring, telling us winter has gone at last.

Before the leaves are fairly out upon the trees this beautiful bird—its soft gray and fawn plumage tinged with blue and its breast bright with a rosy flush—comes flying northward from its winter home in the southern states. Its nest, which is just a rough platform of twigs, usually placed on the low branch of a tree, holds two white eggs; for the mourning dove, like most pigeons, considers that two children are quite enough to bring up at one time.

When the nesting season is over the doves fly about in flocks and help the farmers by eating great quantities of weed seeds. It is pleasant to be able to say that people are beginning to understand what really useful birds the doves are, and in some states have made it unlawful to shoot the gentle creatures.

Doves are easily tamed, and ever since the days of the Greeks have been used by man to carry his messages.



Photo by A. A. Allen

Perhaps you have heard the plaintive cooing of these gentle mourning doves. The lovable little creatures are treated as game birds in some states, and slaughtered in great numbers every autumn.

The STORY of BIRDS

Reading Unit No. 10

BIRDS YOU MAY MEET ON A COUNTRY ROAD

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

Birds you may meet on country roads, 4-82

The goldfinch and its way of living, 4-82-83

The members of the sparrow and finch family, 4-83-87

The bobolinks that come from Brazil, 4-87-89

A bird that never lays eggs in its own nest, 4-89-90

The sociable grackles, 4-91

Things to Think About

What makes the nest of a goldfinch soft?

Why do all finches and sparrows have short stout beaks?

Why are female grosbeaks plainly colored?

Why is the vesper sparrow's nest a safe one?

Why is no one allowed to shoot meadow larks?

For what purpose do bobolinks travel 16,000 miles a year?

Why are cowbirds dangerous to other birds?

Why do other birds detest and fear grackles?

Picture Hunt

How can one recognize a vesper sparrow? 4-85

Why did the chipping sparrow adopt this cowbird? 4-86

Describe the grackle and the cardinal. Color plate opp. p. 4-40

Where does the bobolink spend the winter? 4-88

What do cowbirds always neglect to do? 4-89

What do baby birds always do when their mother comes back to the nest? 4-90

Leisure-time Activities

PROJECT NO. 1: Learn to recognize the birds discussed in this

chapter.

Summary Statement

The birds we see on walks along country roads are very interesting. Usually they are sparrows, goldfinches, meadow larks, cowbirds, bobolinks, and grackles. Cowbirds interest us because they lay their eggs in other birds' nests. The smaller mother bird hatches the strange egg and even feeds the baby cowbird. Unfortunately,

baby cowbirds are hungry, and as they are large enough to shove the other babies out of the nest, only the cowbird survives in the nest of the bird that hatched it. Bobolinks are useful in the north, but in the southern states they eat young rice and are therefore slaughtered by the thousand.

BIRDS YOU MAY MEET ON A COUNTRY ROAD

With these four hungry youngsters, Mother Sparrow will hardly have time to feed herself.



Photo by A. A. Allen

BIRDS YOU MAY MEET *on a* COUNTRY ROAD

The Dainty Goldfinch and the Merry Song Sparrow Are Only Two of the Gay Feathery Folk Who Haunt the Waysides and Fields

AS YOU tramp along a sunny country road, all on a bright spring day, you will be sure to meet some of the little feathery folk to whom you have already been introduced on other pages of these books. Cock Robin, perched on the top of a rail, will greet you as you pass with an impudent flick of his tail and a rippling "laugh." From a clump of shady trees growing by the wayside comes the "tap, tap" of a flicker or a red-headed woodpecker. Over your head graceful swallows will be skimming through the air, while in hedgerow and briar patch you will hear the soft twittering of baby birds.

But to-day we shall hope to make some new friends in the bird world. We shall keep a lookout for certain bold little wayfarers who, though they may at times visit our orchards and gardens, are usually to be found living out in the open country, among scattered bushes and briar patches not far from the roadway or in the flowering meadows with only the blue sky overhead.

Do you see that wee bird swinging on a dandelion head? He is a little goldfinch. In his bright yellow suit he looks like a ray of sunshine as he flits here and there among the wayside flowers, calling cheerily "ta-wit-a-tee! per-chick-a-ree!"

He is the merriest of little birds. In the early spring he just plays about and enjoys himself, and never thinks of settling down to home life until about the end of the summer. Not until July or even August do our friends the goldfinches set about building their nest in a bush or a tree by the roadway or in a meadow or an orchard a little to one side. The nest is the prettiest of little nurseries. It is made of grasses, cotton, and moss, and lined with soft thistledown.

The mother goldfinch does nearly all the hard work, while her tiny husband cheers her with a song of wonderful trills and quavers. The female is not so bright as her mate, her plumage is a dull olive-green and yellow. But both birds have black tails and black wings barred with white.

Four or six bluish-white eggs are laid in the pretty nest, and then the male goldfinch has not so much time for singing. He now bustles about gathering food for his patient brooding mate; and every time he flies home to the nest bringing a nice ripe seed in his beak, he calls to her with a sweet whistling note to tell her that he is coming—and she thanks him with a soft low twitter.

In the fall joyous little bands of goldfinches go gypsying over the countryside, gathering seeds from thistle heads—a food they are

BIRDS YOU MAY MEET ON A COUNTRY ROAD

especially fond of. They come bobbing and bounding into the garden, swing upon the sunflower heads and flutter about the lettuce plants, feasting upon the ripened seeds and twittering with delight all the time. Even in winter these sprightly wee birds do not leave us. Small parties of them are often to be seen about Christmas time, clinging to the swinging balls of the sycamore trees while they peck busily at the seeds.

Goldfinches are useful in destroying the seeds of weeds growing in the farmer's fields; and in late summer they sometimes feed their babies on troublesome insects which do a great deal of harm to growing crops of every kind.

The lovely little goldfinch belongs to the tribe of finches and sparrows, which is one of the largest of all the song-bird families. There are nearly six hundred different kinds of finches and sparrows, distributed over every country in the world, except Australia. Among them are some of the most beautiful of little birds and some of the sweetest singers.

The Huge Family of Finches and Sparrows

To distinguish one from another this huge family is split up into different clans. There are the true finches, the sparrows, the grosbeaks, and the buntings. Those belonging to the sparrow clan are mostly modestly dressed in quiet shades of brown, while other members of the finch tribe go gaily clad in the brightest of feathery suits. The famous red cardinal of the more southern states is one of the finches; so is the wild yellow canary, whose home is in Madeira; and there are many other equally beautiful birds in this group. You can tell that all these small feathered folk are closely related, for they

all have very stout, short, wedge-shaped beaks—the most useful kind of beak for crushing and cracking the seeds which all sparrows and finches love to eat.

The grosbeaks (grōs'bēk') have the biggest and stoutest beaks of all. If we are lucky, we may catch a glimpse of the lovely rose-

breasted grosbeak popping about among the branches of the trees by the wayside. You will recognize him at once

by the triangular, rosy-red bib on his white breast. There is a rosy-red flush, too, on the feathers under his black and white wings; it shows plainly when he spreads his wings and flies away.

But the rose-breast is not only a very fine fellow; he has a charming voice as well. His song reminds one of a robin's song, but it is even more varied and musical. All through May and June he sings, often pouring out a flood of melody from his little throat far into the night.

The female rose-breast is not in the least like her handsome partner. You might easily mistake her for an overgrown sparrow, for she is plainly dressed in speckled brown, with never a speck of rose about her. Her only adornment is a white stripe over her eye. Yet this, no doubt, is just as well, as there is nothing about a female rose-breast to attract the attention of passers-by when she is sitting quietly on her pale green, speckled eggs in her nest in the crook of a tree by the wayside. The nest, which is not very large for the size of the bird and not very tidy, is built of twigs, rootlets, and weed stalks, and it sometimes has a fringe of loose ends hanging down all round.

Rose-breasts love trees, though they do not like to be closely shut away from the air and sunshine in a thick dark wood. Groves by the wayside, scattered bushes in old pas-

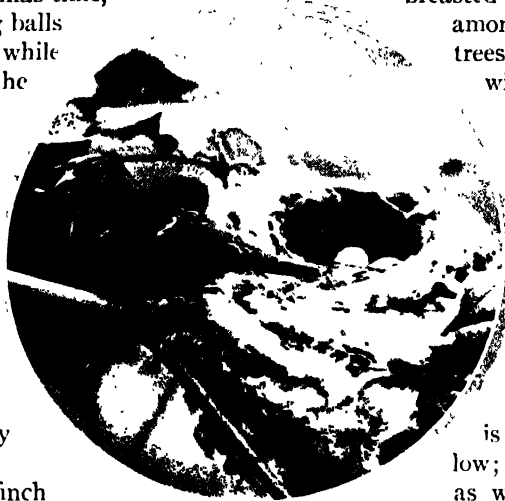
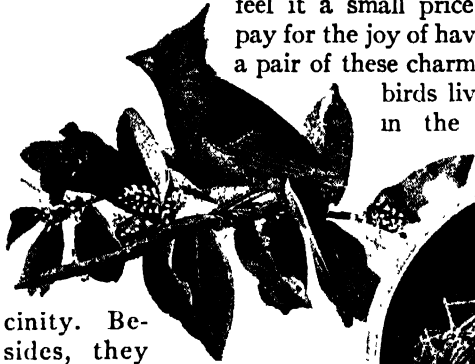


Photo by A. A. Allen

The goldfinches are one of the last birds to nest. Before the breeding season they travel around in flocks, when they seem to have such a good time that they must find it hard to settle down to the more important duty of raising a family.

BIRDS YOU MAY MEET ON A COUNTRY ROAD

ture land or by the side of a rippling stream, are the sort of places they choose for their summer home. They will even build in an old orchard sometimes. Although they are often accused of stealing green peas from the vegetable gardens, they are nevertheless dearly loved by their human friends, who feel it a small price to pay for the joy of having a pair of these charming birds living in the vi-



cinity. Besides, they do good by clearing the orchards and gardens of many injurious insect pests, especially potato bugs.

The rose-breast is not a resident bird. He leaves us in the winter for Central America or Northern South America, coming back to delight us with his beauty and his happy song in the early days of the following May.

In the West the black-headed grosbeak takes the place of the rose-breasted one. The male bird has a golden-yellow, instead of a rosy-red, breast, and he is as famous a singer as his cousin of the eastern states.

One of the Farmer's Best Friends

Flitting before us down the dusty road goes a small grayish bird with a striped breast; he moves ahead a little way, and then flies a little distance near the ground, giving us a glimpse now and then of his white outer tail feathers. Presently, if we follow too closely on his tracks, he spreads his wings and drops down among the daisies on the other side of the hedgerow.

This is the vesper sparrow, unpretentious little field bird seldom found very far away from the fields and meadows. Quite early in

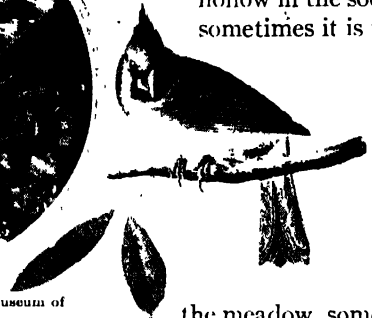
the springtime, when the farmer is sowing his seeds, his sweet, rather plaintive little song is heard from the fields and roadways. "Listen to my evening singing," he seems to say with a trill, as he tells us that he has come back from his winter trip to the southern states. Everyone welcomes the little wanderer, for he is one of the farmer's best friends. All through spring and summer he works away in the pasture lands and cultivated fields of his northern home, destroying many troublesome insects and large quantities of weed seeds as well.

The vesper sparrow's nest is a little cup-shaped cradle placed in a little hollow in the sod; sometimes it is in



Photos by A. A. Allen and American Museum of Natural History

Audubon painted the cardinal grosbeaks shown on either side of the circle. This bird adds beauty and song to the southland. His place is taken in northern climes by his cousin, the rose-breasted grosbeak, who is shown in the center, just as the camera caught her when she was returning to her nest.



the meadow, sometimes on a bare patch of ground by the wayside. And there, with no other protection against wind and weather, the little bird sits on her speckled eggs. In her

mottled brown coat she looks so much like one of the clods of earth lying all about that nine people out of ten would pass by and never notice the cunning little bird.

We may meet, too, the savanna sparrow and the song sparrow along the road that winds through cornfields and meadows, where golden-eyed daisies nod at black-eyed Susans and timothy grass shakes its head at the bees buzzing among the clover. All these birds are much alike, but the savanna sparrow is the smaller and has the shorter tail, while the song sparrow has a much larger dark spot right in the middle of his white waistcoat, which is otherwise streaked with brown in the prevailing sparrow fashion.

The savanna sparrow, who spends the summer right up on the northern border of

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the United States, likes best to build its nest down on the ground among the clover or the tussocks of grass in damp meadows or waste land. There it creeps about like a little mouse, and perched on one of the tall weeds, trills its faint but somewhat shrill little song—"sip, sip, see, see, me-eel!"—through the warm summer days. You might, if you were not listening carefully, mistake the song of the little fellow for the trilling of a cricket or grasshopper. Even more insectlike is the voice of the grasshopper sparrow, a shy wee bird who hides in the long grass and would never be noticed at all if he did not fly up to a fence or the tallest weed stalk in the field

If you see a bird looking much like an English sparrow save that its outer tail feathers are white, you may be practically certain that it is a vesper sparrow. One of them is shown at the right.



Among the large sparrow tribe it is usually very hard to tell male from female. Song sparrows, like the ones shown here, are found all over the United States and Canada. Can you tell the husband from the wife?

Photo by A. A. Allen

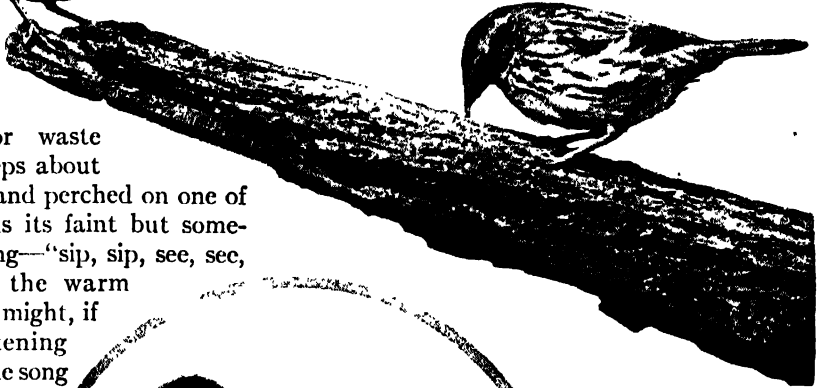


Photo by American Museum of Natural History

The little Andean white-throated sparrow, shown above, lives high up in the great mountain range from which he takes his name. While it is spring to him, in his South American home, the leaves are falling in the United States.

row is one of the brightest and cheeriest of little song birds, always a favorite wherever he goes. He is not so much a bird of the open country as the vesper or savanna sparrow, but we may often find him taking a dust bath in a quiet country road, or sitting on the top of a bush by the wayside singing "Hip, hip hooray, spring is here."

This merry little sparrow does not sing in the springtime only. On almost any day in the year he is to be

heard caroling away in one place or another, although of course, like other birds, he sings his sweetest and loudest at nesting time.

now and then and trill his funny little song to warn other grasshopper sparrows off his private ground. The song spar-

The song sparrow's nest may sometimes be on the ground in a field or overgrown pasture land, but more often it is hidden in a bush on the edge of a thicket or a briar patch near a lake or stream. For song sparrows are most particular little birds; they love bathing, and if you want to have them singing in your garden all summer, the best thing to do is to provide an inviting bath



Photo by A. A. Allen

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for them and see that it is always full of clean, clear water. Then from May to September you may be rewarded by seeing the gay little birds splashing vigorously in their bath and hear their grateful song—"sweet, swe-et, swe-et"—round about you on sunny days, dull days, from sunrise to sunset, and even breaking out in joyous snatches at any hour of the summer nights.

In winter flocks of song sparrows, in company with snow birds and finches, often take shelter along the edges of the marshes and on the slopes of the hills, and will come confidently into the farmyards and gardens to see if you have provided any Christmas cheer for your little feathered friends. As a reward for your kindness these brisk, happy little birds will often sing you a sweet little carol "on a cold and frosty morning," even when the ground is covered with snow.

The field sparrow is another little wayside favorite. His pale buff-

at once from other sparrows who spend the summer months in the northern states.

On the first warm days of spring the sweet, simple notes of the little wayfarer float over the roadsides and fields. Sitting perched on a twig or a thorn bush he sings his simple lay over and over again. Starting rather slowly, the notes come faster and faster, and the song ends with a tremendous trill. Like the song sparrow he sings, too, in the hottest summer days; but toward the end of the autumn he slips away to the south, and perhaps spends winter in New Jersey or even in one of the gulf states.

Amidst the chorus of bird voices that fill the flowery meadows and the farmer's fields we shall soon mark one that rises loud and clear above them all. "Spring o' y-e-a-r! Spring is h-e-r-e! 'T-is sweet,

sweet, sweet to me-e!" it seems to say—and surely everyone will agree with the bonny bird who is singing so cheerily, for spring o' the year out in the open country is indeed the sweetest time of all.

The meadow lark, for that is the name of the singer, is one of the best-known of all our feathered friends of the countryside. From Southern

Canada right through the United States down to Mexico, wherever there are cultivated fields and

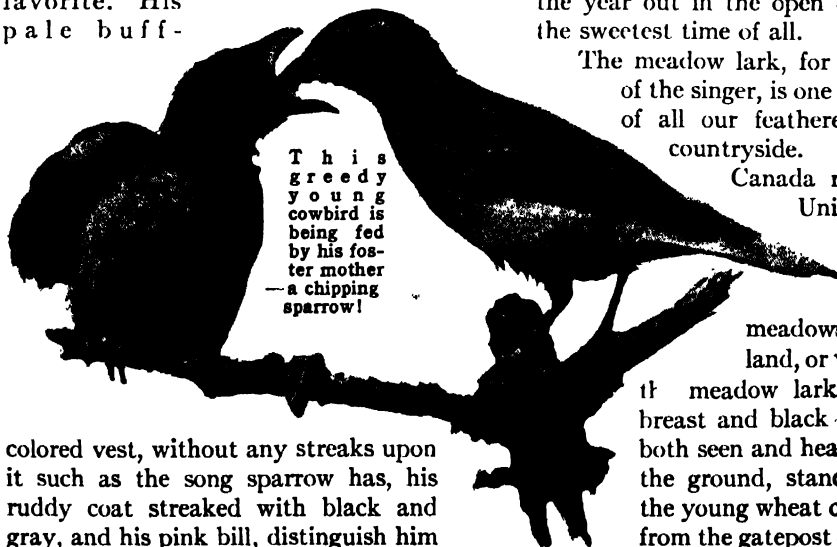
meadows, rolling pasture land, or wild prairies, there

the meadow lark, with his yellow breast and black bib, is sure to be both seen and heard. He sings from the ground, standing knee-deep in the young wheat or clover. He sings from the gatepost or the top of a tree



Photos by A. A. Allen

We shall meet the plainly clad little grasshopper sparrow in hot, dry fields. He is so shy and so like his surroundings in color that we are very likely to miss him unless we keep a sharp lookout.



This greedy young cowbird is being fed by his foster mother—a chipping sparrow!

colored vest, without any streaks upon it such as the song sparrow has, his ruddy coat streaked with black and gray, and his pink bill, distinguish him

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in the open road. And, sometimes, still singing, he mounts up and up on quivering wings high into the blue sky.

Many words have been fitted into the song of the lark. To some he always seems to be singing of the merry springtime, while to others the song sounds like "I see y-o-u-u-u! Do you see m-e-e-e?" or "Laziness will *kill* yo-u-u!" Next time you hear a lark singing, listen carefully and see what message he has for you.

Though you may often see and hear the lark, and know that his nest must be somewhere near in the grain or the clover, it will puzzle you to find it. And it is not much good watching the bird to see where he goes when his song is ended, for neither he nor his mate—who is also dressed in brown and yellow—ever fly directly to the spot where the nest lies hidden. The wise birds always drop to the ground some little distance away and then walk quietly home through the long waving grass.

The nest is made of dry grasses, and has a grass roof to shelter the baby larks from the rain and the hot summer sun. From four to six speckled eggs are laid in this cozy little nursery; and it is quite two weeks after they are hatched before the young birds are feathered and able to run out of doors into the forest of tall weeds and grasses that wave above their tiny heads.

All summer long the larks work away in the farmer's fields, clearing away thousands of insects to feed themselves and their young ones. They do so much good that everywhere they are protected by law, and no one is allowed to shoot them. Even if this were not so, there surely are very few people who could be so hard-hearted as to kill one of these bright and happy birds.

In autumn and winter—unless we happen

to live right up in the north—we may still see larks flying about the fields looking for insects and weed seeds. For unless the cold is too severe, these hardy birds do not, as a rule, go very far away from their summer homes—though round about Christmas time many of the northern birds pay a short visit to their relatives living in the southern states.



Photo by A. A. Allen

Here is our old friend the meadow lark showing what useful service he does for the farmer. The song of the meadow lark, often uttered on the wing, is a very beautiful one. And that is only natural, for the plump fellow is cousin to the orioles.

The Western meadow lark, who lives out on the Western plain and in the fields and meadows along the Pacific coast, is very much like his Eastern cousin. He is the same size, about 10 or 12 inches long, has a mottled brown coat, yellow breast, black bib, and a long, slender beak. But the Western

bird is even more famous for his song. It is louder and wilder but very sweet and musical. No matter if the day be bright or cloudy the Western meadow lark sings away as if he had not a care in the world. He sings by day and

he sings by night. He sings from a post or a tree by the roadside or in the ivy. He is even heard pouring forth his wonderful song up aloft in the rain or in a snowstorm, as if he thoroughly enjoyed such wild weather. No wonder the lark is such a favorite with all.

Curiously enough, the meadow larks, in spite of their name, are not true larks at all, but belong to the blackbird family.

A Favorite Bird of Field and Meadow

Another favorite bird of the fields and meadows is the merry little bobolink. Not many years ago the bobolink was known only on the eastern side of America, but now he is a welcome summer visitor as far west as the Rocky Mountains.

Bobolinks are not "early birds." They do not appear in their summer home until the first warm days of May. But this is not

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surprising, for the brave little travelers have journeyed eight thousand miles across land and sea, all the way from the great plains of Brazil or the marshes of La Plata River, away down in tropical South America. But when the bobolinks do arrive it is not long before everyone in the neighborhood is made aware of the fact. So delighted are they to be back again in their happy summer camping ground that they chase one another merrily all over the fields, crying "tink, tink! pink, pink! bob-o-link-bob-o-link!" Such a noise as they make! It sounds for all the world as if the gay little birds were all "playing on the old banjo."

If you watch them at their games among the buttercups and daisies you will soon notice that while some of the birds are dressed very much like sparrows in streaky brown, buff, and black feathers, others have smart black and white costumes with a bright yellow patch at the back of the neck. The modest brown streaked birds are the lady bobolinks. Those in black, white, and yellow are their gallant mates, all decked magnificently in their best courting finery.

The bobolinks' visit to the north is not a very long one. After they have played for a week or two and chosen their partners, each little pair starts nest building without loss of time, for already spring has given place to summer and there is much to do before they will be free to start on their long journey

back to the fields of South America again.

The male bobolink is now much quieter and more businesslike. While his wife is sitting on her speckled eggs, in the simple cup-shaped cradle of dry grass well hidden in the thick grass or clover, he ceases to sing so lustily. An occasional "pink, pink, chink, chink!" is all he utters, for he does not want to attract attention to his little family. And the mother, too, is exceedingly careful not to give the secret away. She runs quite a long way through the grass before taking wing when she leaves her nest for a little exercise or to fetch food for her young ones; and she returns home in the same cautious manner.

By the end of July the young ones are strong on the wing and ready to set off on the long, long trail to their winter home. By this time the male bobolink has changed his gay springtime dress for a quiet traveling suit of buff and brown. Now he and his wife and the young bobolinks are so much alike that you can hardly tell one from another.

They take their time on their homeward journey, stopping here and there to rest and feed by the

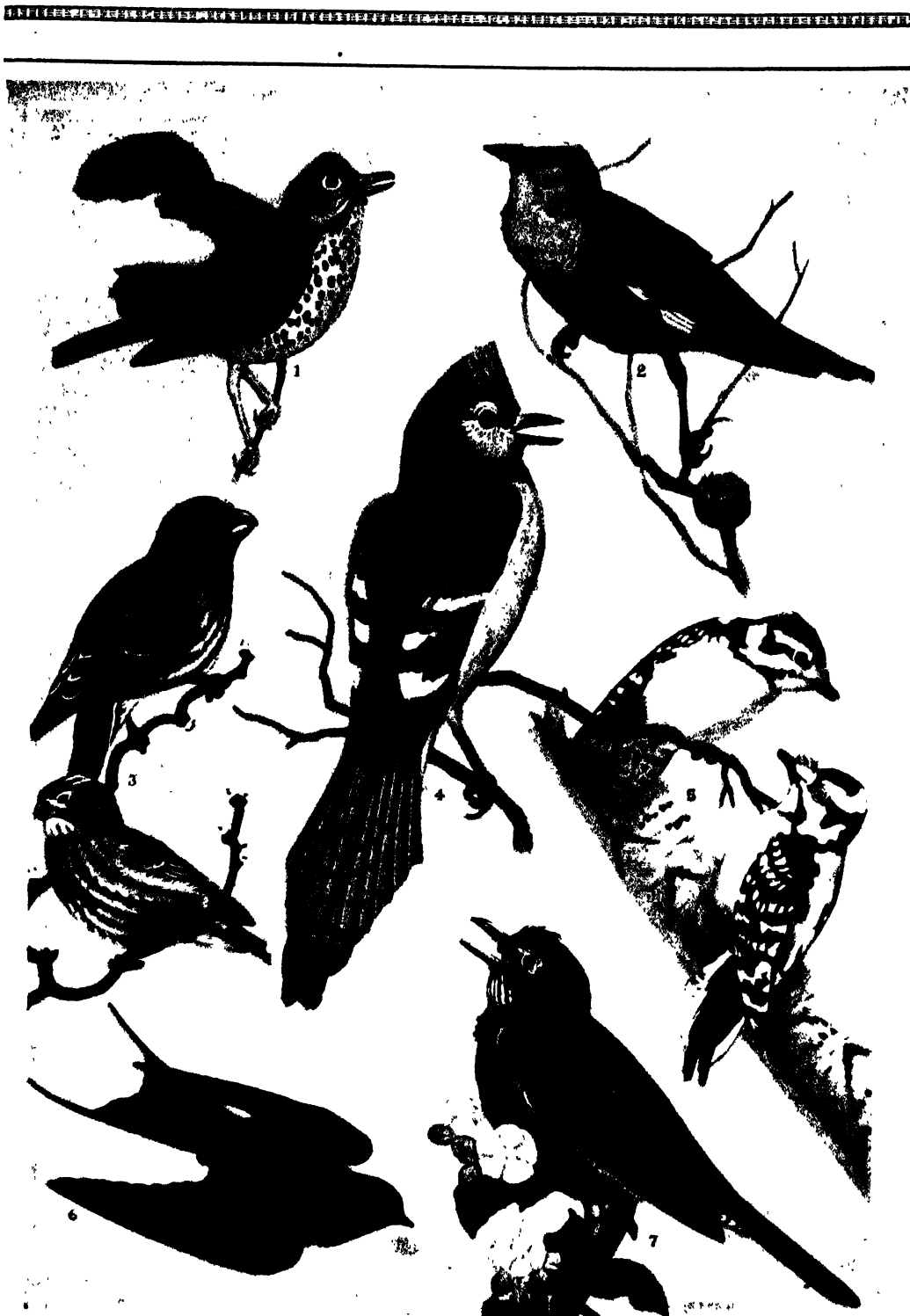
way, but by the end of August or the beginning of September large flocks of bobolinks have reached the southern states. Here they are always called "ricebirds," and are not such welcome visitors as they are in the north. For instead of helping the farmers by killing troublesome insects,



Photos by American Museum of Natural History

The bobolink is known to every country lad in New England. There it is that "Robert of Lincoln" often tends the pretty nest shown below, and raises a brood. In the winter the bobolink frolics about in the warmest part of South America. He is rather well traveled for such a little bird.





After Paintings Supplied by the National Association of Au

1920

Here is a gay page of our feathered friends, showing them in color so that we may recognize them the next time we meet. 1. Wood thrush. 2. Yellow-headed

bluebird. 3. House finch. 4. Blue jay. 5. Downy woodpecker. 6. Barnswallow. 7. Robin. You know Robin Redbreast --but what of the others?



After Paintings Supplied by the National Association of Audubon Societies

These gay-colored flying folk are for the most part birds of well-known species. 1. Black-headed grosbeak, male and female. 2. Baltimore oriole. 3.

Red-headed woodpecker. 4. Red-shafted flicker. 5. Yellow-bellied sapsucker. 6. Road runner. 7. Redstart. 8. Red-breasted nuthatch. 9. Bobolink.

BIRDS YOU MAY MEET ON A COUNTRY ROAD

as they do all summer, these mischievous birds fly about the rice fields devouring large quantities of rice, which is then in the milky state; they do a great deal of damage. So when the bobolinks, or ricebirds, leave the southern states and continue their journey to South America, the rice growers, at least, are very glad to see them go.

The Curious Antics of the Cowbird

The meadow larks and the bobolinks belong to the blackbird family. So, too, does the cowbird, a black bird with bluish tints on its feathers and a brown head. He is often to be seen walking about composedly among the feet of the cattle and horses in the farmyards and fields both in the East and the West of North America. The animals do not object to the birds' attentions. In fact they seem to like it. It is no uncommon sight to see a cow peacefully cropping the grass while two or three cowbirds sit in a row on her back. The reason for this strange friendship is, of course, that the birds pick off the biting, stinging insects that worry the poor beasts in the summer time. At other times, particularly in the springtime, cowbirds delight to sit on the tops of trees by the wayside and sing in chorus in rather harsh, squeaky voices. They go through the strangest of antics, too, to attract one another's attention. They fluff out their feathers, spread their wings, and point their beaks to the sky; then suddenly they topple forward with a shrill hissing whistle, as if they felt very sick.

The little females, who are plain grayish-brown birds, take no part in these strange exhibitions, though it is chiefly on their account that the male birds show off in this way. The females soon tire of the company of

the performing birds, and each lady cowbird wanders away by herself. She moves slyly about the fields, trees, and hedgerows, and even pays stealthy visits to the woods and thickets round about, peering here and peering there as if she were looking for something.

And this is exactly what the cowbird is doing. She is not trying to find a nice place to build a nest. Oh, no! She has no idea of troubling herself with work of that sort. She likes to be free and independent and just enjoy herself all the summer long. No, this lazy bird just looks round till she finds a nest that has been recently finished by some small bird—such as a sparrow, a warbler, or a vireo—and when the little parent birds are off guard for a moment, she just pops her own eggs into the nest and slips quietly away before the rightful owners return home. And so the artful cowbird goes on, depositing an egg here and an egg there and leaving them to be hatched by the home-loving little birds she has so slyly tricked.

The Fate of the Strange Egg

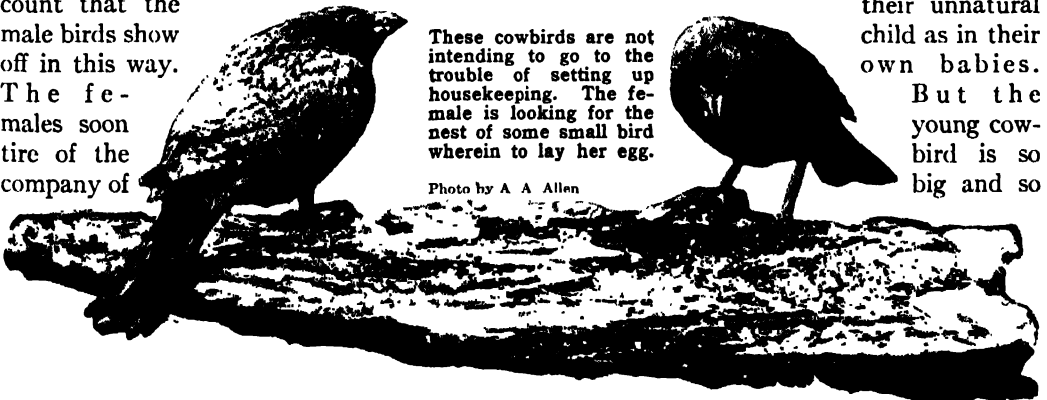
The small birds are not always deceived. A wren usually digs her beak into the strange egg and pitches it out of doors as soon as she discovers it. A vireo will sometimes bury the cowbird's egg in the bottom of the nest, and the little yellow warbler, if she does not desert her nest in a fright when she spies the strange egg, will often set to work to build a second nest on the top of it.

But for all that, a great many of the cowbird's eggs do get hatched, and the little foster parents take quite as much pride in their unnatural child as in their own babies.

But the young cowbird is so big and so

These cowbirds are not intending to go to the trouble of setting up housekeeping. The female is looking for the nest of some small bird wherein to lay her egg.

Photo by A. A. Allen



BIRDS YOU MAY MEET ON A COUNTRY ROAD

greedy that he crowds his little nestmates aside, and nearly all the food brought to the nest by father and mother goes down his gaping throat. The consequence is that the other poor babies are starved, if they are not shouldered right out of the nest by the greedy stranger.

The grackle, or the "crow black-bird," as it is often called, is another bird who is not at all a favorite among the smaller feathered tribes. True, the female grackle does not lay her eggs in her neighbors' nests; but she and her mate are accused, and on good grounds, of stealing and eating the eggs of other birds at times—which is really a barbarous thing to do.

Northern farmers, however, welcome the grackles when they come flocking from the southern states early in the springtime. For at this time of the year the birds are very useful. They follow the plowmen round and round the fields, snapping up the harmful grubs as fast as the troublesome things are turned up by the plow. But later in the season the grackles lose their good character, since unfortunately they are too fond of pulling the sprouting wheat up by the roots.

Toward the end of June the bold birds descend in a body on a field, tear open the husks, and have a genuine feast on the soft, ripening grain.

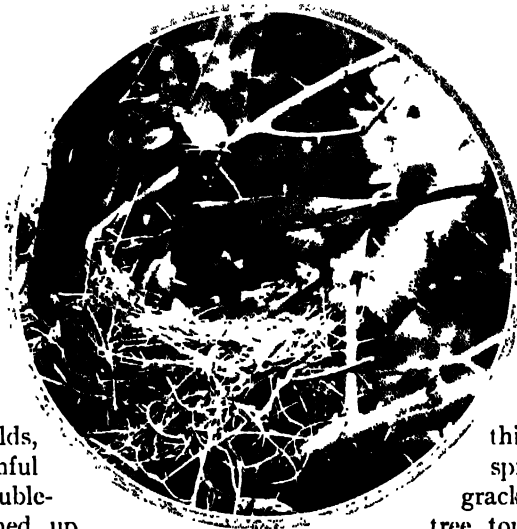
Still, in spite of all their faults, the grackles are handsome and interesting birds, and we should miss them and their funny ways if they ceased to pay us their annual spring and summer visit. They are the largest of all the black-birds—about thirteen inches long from the beak to the end of the long wedged-shaped tail. Their glossy black feathers are shot with blue, purple, and bronze tints which gleam and change color in the sunshine as the birds strut about the fields with an important air which is most amusing to watch.

But the voice of the grackle is not at all beautiful. It has been compared to the creaking of a rusty hinge, and as they fly about calling to one another, the hoarse and squeaking sounds they make are anything but musical. In the springtime a number of grackles will assemble in the tree tops on the border of a field and give a concert, which they seem to enjoy very much, though nobody else admires the music. There they will sit for a long time, in the early morning



by A. A. Allen and U. S. Bureau of Biological Survey

This bronzed grackle must have had a hard time deciding which of her youngsters needed food most. The boat-tailed grackle, below, seems to be having an equally hard time. The bronzed and purple grackles are found in the northern part of North America, while the boat-tailed grackle lives in the south.



BIRDS YOU MAY MEET ON A COUNTRY ROAD

or toward the close of day, all chucking and clucking and squeaking and rasping away, making the most discordant noise one can imagine.

There are three well-known grackles in the United States, the purple grackle, who is perhaps most familiar in the Northeast; the bronze grackle, another regular visitor to the Northeast and Central North America; and the Florida grackle, who makes its home all the year round in the southern states. All these birds are very much alike, varying a little in size and color, and they all behave in much the same way.

The Sociable Grackles

Grackles are extremely sociable birds. A whole company of them often live together in neighborly fashion in a clump of spruce trees near a farm or on the edge of a wood. There they build their large, rather untidy-looking nests of weed stalks and grass; these are always well daubed with mud on the inside and finished off with a lining of grasses.

They are much like a robin's nest, though larger.

You never see grackles playing and frolicking around in the light-hearted way of so many birds. They are serious birds. And except when they are giving one of their "concerts" they spend all their time building their nests, tending their young, and scouring the country for food. From morning till night, all through the summer days, you may see foraging parties flying backward and forward between the fields and their nests. For as each pair of grackles may have as many as six or seven lusty young grackles to feed, marketing takes up most of their time. When the children are old enough to use their wings the parent birds take them out, to teach them to be independent and find food for themselves. And little family parties will often visit the farms and gardens round about, to see if friendly folk have put out any crumbs, cracked wheat, or scraps of raw meat as a treat for them. Attentions of that sort are greatly appreciated.



Photo by Arthur A. Allen

The little field sparrow at the left is disputing with a bold house sparrow the right to be served at this feeding station in the orchard. From the look of things one would say that he is carrying his point.

The STORY of BIRDS

Reading Unit

No. 11

SOME FEATHERED FRIENDS OF THE FIELDS

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

The habits of the friendly bobwhite, 4-93-94-96
The life of the ring-necked pheasant, 4-96

The sage grouse and the prairie chickens, 4-96-98
The nighthawk, hunter of night-flying insects, 4-98

Things to Think About

In what way do the food habits of bobwhites help farmers?
How can you recognize the bobwhite by his call?
What is a "covey"?
Why are the bobwhite's sleeping habits a form of life insurance?
How do bobwhite babies act when

they are hatched?
How did the ring-necked pheasants come to the United States?
What interesting courtship antics have the sage grouse and prairie chickens?
Why does the nighthawk fly all night?

Picture Hunt

Where are wild turkeys found today? 4-93
How can a bobwhite frighten you? 4-94
What is the origin of the barnyard turkey? 4-94
Why do birds indulge in courtship dances? 4-95

What instrument does a bobwhite chick use in order to get out of its eggshell? 4-96
Where can we find heath hens today? 4-97
What protection against enemies do baby heath hens have? 4-98

Leisure-time Activities

PROJECT NO. 1: If you can, visit a game farm where pheasants are raised. How many kinds do you find? A large zoo also has

many kinds of pheasants; and you may frequently see them in the market during the open season in the fall.

Summary Statement

Among the birds found in fields, the bobwhite is the most common. He deserves protection because he devours enormous numbers of insects in summer and weed seeds in winter. He shouts

his name, so that it is easy to recognize him. The sage grouse and prairie hens have very interesting courtship dances, which the males perform before the watching females.

SOME FEATHERED FRIENDS OF THE FIELDS



Photo by An Museum of Na

High up in the mountains of West Virginia, where deer, bears, and wildcats are still found, the wild turkey is making one of its last stands. The father

has a bad habit of destroying the eggs; so the wife must always hide them from him very carefully. He does not have such designs on the chicks.

SOME FEATHERED FRIENDS *of the* FIELDS

Come Out for a Walk through the Countryside and Meet Bob White and Some of His Interesting Feathered Neighbors

MOST of the birds of the open country more than earn their board and keep by destroying the multitude of insect pests that make the farmer's life a burden. Of course there are a few that have a bad reputation. But however much he may complain of certain of the birds, the farmer can have no fault to find with the gentle little bobwhite. He is quite welcome to settle himself in the fields and to come into the gardens and orchards whenever he pleases. For "Bob White" is one of the farmer's most industrious little feathered helpers. He works away merrily all spring, summer and autumn killing hundreds and thousands of wireworms, potato beetles,

cucumber beetles, weevils, locusts, and grasshoppers, caterpillars of all sorts, and every kind of insect that wages war upon the field, garden, and orchard crops. Not only this, but the busy little birds destroy great quantities of weeds as well by gobbling up the seeds wholesale; and if he *does* make a mistake now and then and eat a few grains of wheat, or a little ripe fruit, it is such a very small amount that it is really of no consequence.

Whether you wander east or west, south or north, it is not likely to be long before you make the acquaintance of this plump and jolly little game bird, for he will introduce himself to you by repeating his own name.

SOME FEATHERED FRIENDS OF THE FIELDS

"Bob White, Bob White, Ah, Bob White!" His cheerful call sounds over the fields, alike when the first green shoots are pushing their way through the dark earth and when Jack Frost in the autumn powders the ground with his glittering crystals. For "Bob White" stays with us all the year round; and except in the extreme northern states, never thinks of going off for a long holiday when the summer days are over.

In the north the bobwhite is called the quail, and in the south, the partridge; but most people know him best by the name he has given himself, though some country folk will tell you that this friendly little game bird does not say "Bob White" but "More wet," and that he shouts to warn them when rain is coming.

The bobwhite does belong to the partridge tribe, and like most of his relatives, who are to be found living in fields and open country in both the Old and New World, he is a plump, compact little bird dressed in the mottled brown, gray, and buff which make him so inconspicuous when he crouches among the grasses or upon the bare earth.

Of course, since he is a game bird, Bob White spends most of his time running about on the ground, scratching up grubs with his stout claws. Though he can fly very swiftly on his

rather short, rounded wings, he cannot keep the speed up for any length of time.

If you come suddenly upon a "covey"—which is usually a family party of these jolly

little game birds—feeding contentedly in the grass or stubble, with a startled cry they will rise a few feet in the air, making a noise with their strong wings like a bursting bomb-shell. It is enough to startle anyone. Away they all go, whirling over the fields in all directions. But in a few moments they will all have

dropped to earth again and taken cover in the long grass or under scattered bushes. Then when the coast is clear the leader of the covey will call and the birds all gather together again.

At night the bobwhite and his family always sleep right out in the open. The birds settle themselves down on the ground in a ring—all facing outward with their tails to the center. By this arrangement they can keep a watch on every side and are not likely to be surprised by a prowling enemy. If a fox or a stoat or a man with a gun comes near the "magic circle," one of the party is sure to know and warn the rest. Then they are up and whirling away all over the field in an instant.



Photo by U. S. Bureau of Biological Survey

Sometimes when you are walking along in an open field, a bird with plump body and small, powerful wings will dart out from under your very feet. This is bobwhite. The startling noise he made was caused by the powerful beat of his wings. He will fly only a short distance before settling down to the earth again.

This is the familiar Thanksgiving dinner we see strutting around many a barnyard. The ancestor of this gobbler was the wild turkey of Mexico. It was introduced into Europe in the early part of the sixteenth century.

Photo by American Museum of Natural History



SOME FEATHERED FRIENDS OF THE FIELDS



Photos by American Museum of Natural History

On the dry plains of the West the sage hen makes its home. Its courtship performance is an amazing spectacle. The male erects his tail, blows up the air sacs

on his neck, and then slides along the ground in the manner of the bird shown in the center above. This always takes place early in the morning.



In the chill of the early morning these prairie chickens have begun their courtship display. The males start off with a booming noise and then dance a little jig.

After that they blow up the brightly colored sacs on their necks. Then there is a duel for the wife, and the victor escorts her home.

SOME FEATHERED FRIENDS OF THE FIELDS

The bobwhite's nest is simply a hollow scooped out in the ground and lined with leaves or grass. It may be hidden under a bush at the edge of a wood or by the roadside; or it may be right in the middle of a field in a thick tuft of grass. A female bobwhite lays from eight to eighteen glossy white eggs, and the male bird, who is a most good-natured little fellow always ready to make himself useful, helps his wife to hatch them by taking his place on the nest while she hops off to take a little exercise.

The little bobwhites, like other young game birds, are covered with soft downy feathers when they are hatched, and are able to run about almost at once. They follow their parents about the fields, pecking at seeds and insects and having a very good time in the sunny summer days. But they are obedient little birds, and the moment father or mother gives a warning cry, down they all squat, flat upon the ground. And there they will lie without moving a feather until they are told it is safe to jump up and run about again.

Strutting through the fields where modest little Bob White is bringing up his large family of youngsters, we may sometimes see the stately ring-necked pheasant. He is one of the handsomest of the game birds, and

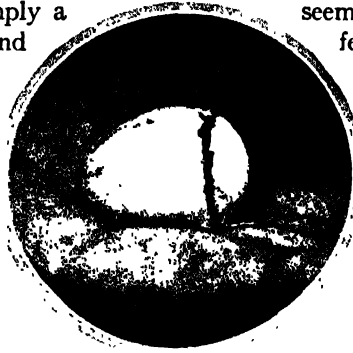


Photo by American Museum of Natural History
A young bobwhite, shut inside the egg above, is making a determined effort to get out and see the world.



Having cut the shell open with his "egg tooth," which is not a real tooth, he flops out into the warm sunlight.



He looks altogether helpless just now, but in a few minutes his feathers will be dry and he will be a fluffy, spry little bobwhite chick.

seems quite to realize what a fine fellow he is, as he marches about with a most important air, taking very high steps through the grass and crying "kok-kok" as he goes. Certainly the cock pheasant has good reason to be proud of himself. The golden-brown feathers on his back are streaked with black and buff; his breast gleams with purple and green; round his neck is a snowy white collar; and his long tail feathers sweep the ground behind him like a train.

This resplendent bird is not a true American. He is a native of China. But many years ago a number of pheasants were brought over and released in Oregon and Washington and several other parts of the United States. Many descendants of these birds now live in a wild state in the fields and open thickets, but we more often make their acquaintance on game farms, where the birds are reared for sport.

Not in the farmer's fields but out on the Western plain lives one of the largest of game birds, the great sage grouse. It looks almost as big as a turkey when, with a tremendous whirring of wings, it suddenly rises from the ground and rushes through the air. From tip to tip of its outstretched wings it measures a yard or more.

This great bird is only to be found on

SOME FEATHERED FRIENDS OF THE FIELDS



Photo by American Museum of Natural History

Years ago when our forefathers first set foot on New England's shores, the heath hen was abundant. As settlers moved into his ancestral home, this noble

bird was sorely reduced in numbers. A colony existed on Martha's Vineyard for a number of years, but the last bird, it is said, died in 1933.

the plains and hillsides where the sagebrush grows, for sage leaves are its favorite food, though the young ones feed mostly on grasshoppers and other insects. Through most of the year the sage grouse live a quiet, retired life among the scattered rocks and sagebrush, but when spring comes round small parties of full-grown cocks assemble and indulge in all sorts of queer antics. They ruffle up their feathers, fluff out their necks and their chests, and with tail in the air they parade about in the most ridiculous way, while the admiring hens peep at them from under the bushes round about.

The prairie chickens are even funnier when they are courting their mates in the springtime. They are handsome reddish-brown birds marked with black and white, and live on the plains in the Mississippi Valley. The cock birds have long black tufts of feathers over

their ears and a bright orange-colored skin bag on

At times during the late summer you will see flocks of these graceful fliers passing overhead at twilight. For they are nighthawks. Their huge mouths engulf any unlucky insect that comes in their way.



Photo by U. S. Bureau of Biological Survey

SOME FEATHERED FRIENDS OF THE FIELDS

each side of the neck. They look very smart.

Early in the morning a party of from twenty to fifty prairie chickens will meet together on the top of a small dry hillock, and while the hens stand round and watch the show, the cocks blow up their air sacs until the bags look like a couple of ripe oranges. Then, with all their feathers ruffled up and their black ear tufts projecting forward, they trail their wings upon the ground and rush about making a loud booming noise. The hens, too, grow greatly excited and move about taking a few quick steps forward at a time, as if they were joining in a funny kind of dance; and the bold cocks keep rushing full tilt at one another as if they were going to have a furious fight, and then, suddenly thinking better of it, they stop short and rush off in the opposite direction.

A Bird of the Night

There are of course many other interesting birds to be seen in the fields and plains and by the wayside, but night is falling and we must wend our way homeward. As we stroll along in the dark we may hear a single loud bird note overhead and looking up see the mysterious nighthawk circling round. As it flies it suddenly plunges downward, almost as if it were falling. The air rushing through its stiff wing feathers makes a curious booming sound. Just before it touches the ground the bird makes a quick upward curve and darts aloft again. From this strange noise and its curious flight the bird is sometimes called the bull bat, though of course the name is an absurd one.

The nighthawk is cousin to our old friend the whippoorwill and has the same wide, froglike mouth and very short beak, but it does not have the stiff, bristly moustache. But although the two birds are very much alike in appearance they are quite different in their ways. While the whippoorwill spends

his days in the gloomy forests, and does not venture out until it is quite dark, the nighthawk is a bird of the open country. He rests during the sunny hours of the day on the bough of a tree, or on the top of a fence rail, sitting lengthwise along his perch, instead of across it in the usual bird fashion. In the late afternoon he is on the wing chasing dragon flies, bugs, and beetles. All through the evening and far into the night the nighthawk keeps up the chase, hunting winged insects of all sorts. We should not know he was about were it not for his sharp cry of "beard," which we continually hear in the darkness overhead. When, just before dawn, he goes back to bed, the greedy bird has stuffed himself so full that he can hardly close his gaping mouth. But we do not blame the nighthawk for having such a huge appetite, for he does an immense amount of good by clearing away great quantities of troublesome insect folk.

Baby nighthawks, like their cousins the whippoorwills, are covered with fluffy down when they break their shells and make their first appearance in the world. And it is a very good thing for the tiny birds that they are protected in this way. For the mother nighthawk builds no nest for them. She simply lays two eggs on the top of a bare hillock or hard rocky ledge out in the open country. Her hardy twin babies seem none the worse for this Spartan treatment.

Strange to say, although nighthawks are such free, independent birds, never becoming tame and friendly with us as so many of the wild birds do, they frequently choose the flat gravelly roof of a skyscraper in a busy city as a nursery for their young ones. Perhaps the nighthawk realizes that there, at least, her babies are safe from snakes and rats and weasels as well as from the inquisitive two-legged folk who dash about in the street so far below.



The STORY of BIRDS

Reading Unit No. 12

STRANGE FEATHERED FOLK OF THE MARSHES

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

Why many birds prefer to live in marshes, 4-100
The swamp sparrow, long-billed marsh wren, rusty blackbird, Virginia rail, and gallinule, citizens of marshes, 4-101-102

The bittern, who wears a cloak of invisibility, 4-103-106
The heron tribe and its habits, 4-106-10
The grebe, sometimes called the "water witch," 4-110-11

Things to Think About

What food can a bird find in a marsh?
What birds are likely to be found in a marsh?
What special color scheme makes a bittern invisible in the marsh?
Why is it advisable to leave a

bittern alone?
How is a heron adapted to marsh life?
How do rails hide their eggs from enemies?
What dangers lie in wait for the baby coots and rails?

Picture Hunt

What would happen to bird life if all marshes were drained? 4-100
How was the egret almost wiped out? 4-101
What bird eats mammals? 4-102

What kind of legs do most marsh birds have? 4-103
How is the crane fitted for marsh life? 4-105
Why are bitterns nearly invisible in the reeds? 4-110

Leisure-time Activities

PROJECT NO. 1: In May or June visit a marsh with field glasses, pencil, and notebook.

Get there at dawn and study the birds.

Summary Statement

To live in a marsh, a bird must be well-adapted to life there. He must be able to catch his food, to wade or swim in the water, and to escape enemies. Herons and bit-

terns have long, wading legs and pointed beaks which they use like spears. Some marsh birds eat frogs, fish, insects; some eat rats and mice; others eat seeds.

STRANGE FEATHERED FOLK OF THE MARSHES



Photo by American Museum of Natural History

Not many years ago this marsh in the San Joaquin Valley in California was an arid plain, harboring cacti and rattlesnakes and birds which are able to live under desert conditions. When irrigation was begun

countless marsh-loving creatures moved in. The bird looking out of the reeds is a black-crowned night heron. Flying overhead are terns, avocets, and ducks. Man has made a great change in bird life here.

STRANGE FEATHERED FOLK *of the* MARSHES

Among the Sedges and the Tall Marsh Grass Live Many Queer and Beautiful Birds Who Are Equally at Home on Land or in the Water

SOME folk tell you that marshes are unpleasant places, dreary and desolate in winter, muddy and infested with snakes and hordes of stinging, biting insects in summer time. Certainly a boggy marsh is the very last spot that most of us would choose for a summer camping ground. But many of our feathered friends do not agree with us about this. To them the low, swampy marshland, with its trickling streams and shallow pools swarming with tadpoles, water insects and shoals of brisk little fishes, is a perfect home. Its great stretches of oozy mud, teeming with hoppers and crawlers, is a happy hunting ground. Its forests of reeds and sedges offer an ideal hiding place where birds of many kinds may sleep and rest or build their little nurseries.

Early in the springtime, as soon as the ice has melted away, the marsh wakes up

from its winter sleep. Water docks and cat-tails push their way up above the surface of the water, and a tinge of green begins to spread over the soft, dark earth.

High overhead sounds the "honk, honk!" of a wedge of geese trailing across the sky on their way to Canada. Flocks of wild ducks come flying up, circle over the ponds, and drop with a splash into the water. Big flocks of migrating red-winged blackbirds pause on their northward journey and descend, like smoke, among the tall dry rushes, where they settle themselves for the night.

Soon the regular summer marshland visitors begin to arrive, and from the middle of April until June the songs and calls of hundreds of birds mingle with the croaking of frogs and toads and the shrill pipings of the little peepers. From early dawn till

STRANGE FEATHERED FOLK OF THE MARSHES

dusk the marshes are never silent. And even at night, after the full evening chorus has died down, restless swamp sparrows, marsh wrens, coots, and water rails join with the frogs and toads in keeping up the



concert until just before sunrise. Then after a short pause the 'chattering and calling begins again.

That small brown bird popping about among the sedges on the margin of a pool is the swamp sparrow. He is not quite so big as his cousin the song sparrow, and is much more timid and shy. But he is a pretty little fellow, with a smart reddish-brown cap on the top of his head, a soft gray waistcoat, and a black stripe on his back. His song, though not so brilliant as the song sparrow's, is very sweet and musical. In the happy springtime he trills and twitters away, well contented with his lot, there among the reeds and rushes, and proud of his nest, which is carefully hidden in a thick tussock of coarse grasses. On it his little wife is hatching her speckled eggs.

The "long-billed marsh wren," though he is such a tiny brown ball of a bird, is not nearly so shy as the swamp sparrow. He bustles about the tangled masses of cat-tails, very busy building a covered-in nest as a nice surprise for his wife when she shall join him in the marsh later on. This work keeps him happy and well employed while he is waiting for the long-billed little lady to arrive. He will probably have several nests half finished by that time, but it is most unlikely that the female will condescend to occupy any one of them.

Very busy and very important is the little wren. He will come flying up with a long wisp of dry grass in his beak, tuck it into the ball of brown sedge leaves hanging among the dead flags, then run up to the top of a tall stem, with his tail cocked forward over his back, to take a look round and see what is going on in the marsh world. And every now and again he will spring into the air like a



Photos by N. Y. Zoological Society

Here are some members of the heron family. The stately gentleman at the top is a great blue heron. A young green heron in the center is holding on for all he is worth to avoid a bath in the swamp. At the bottom is the American egret, formerly savagely slaughtered for its beautiful plumes.



fluffy brown ball and burst into a wild and joyous song.

In the reeds and low bushes on the edge of the marshlands many red-winged black-birds are sure to build their nests. The rusty blackbirds further north prefer to make

STRANGE FEATHERED FOLK OF THE MARSHES

their homes in groups of pine or fir trees growing near swampy ground. The rusty blackbird is a fine, glossy, black bird tinged with blue and green; it is not until the autumn that his feathers have that rusty appearance which has given the blackbird his special name. His mate is a plain dark gray bird with a greenish tinge on her head and back.

When Blackbirds Get Together

Flocks of rusty blackbirds enjoy assembling in the tree tops in the spring and singing all at once as the grackles do. Although their voices are not quite so hoarse and raspy as the grackles', their squeaking whistles and gurgles can hardly be called musical. The birds' call, too—"chuck! chuck!"—is so like the croak of a wood frog that out on the marshes it is by no means easy to distinguish between them.

Rusty blackbirds are seldom seen far away from the water. They love to paddle about in the shallows, picking up fresh-water shrimps, fat water grubs, and other such delicacies with their sharp pointed beaks.

Mingling with the song of wrens, sparrows, warblers, and blackbirds, and the buzzing of insects on the marshes, we hear all sorts of strange notes which are very puzzling until we learn to know the many different calls of the feathered marsh folk.

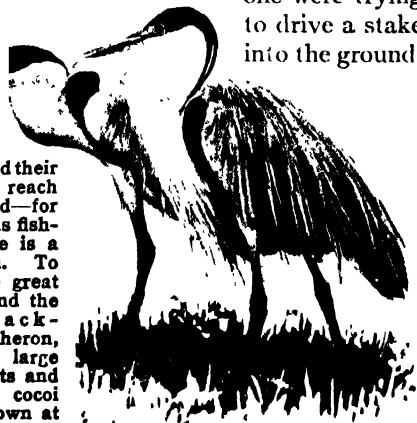
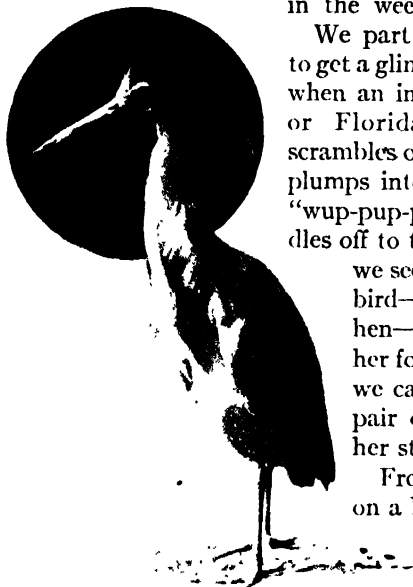
"Ticket! Ticket! Ticket!" demands a loud voice which makes us think for a moment that we must have strayed into Alice's "Wonderland"—where the creatures were so very dictatorial. But there is nothing to be alarmed at. It is only a Virginia rail, a slim, dark-brown marsh bird much like a small brown hen with a long reddish bill and a turned-up tail. It is dodging about in the weeds on the edge of a pool.

We part the rushes and are trying to get a glimpse of the "ticket collector" when an indignant "water chicken"—

or Florida gallinule (gäl'yī-nūl)—scrambles out of her hidden retreat and plumps into the water with a startled "wup-pup-pup-pup-pup!" As she paddles off to the opposite side of the pool

we see that she is a small blackish bird—about the size of a bantam hen—with a large red shield on her forehead. Through the water we can just catch a glimpse of a pair of smart red garters round her sturdy green legs.

From a tangled mass of sedges on a boggy patch of ground by a lazy little stream comes a tap! tap! tap! which sounds exactly as if someone were trying to drive a stake into the ground.



The herons need their long necks to reach their funny food—for they are famous fishermen. Above is a pileated heron. To the left is the great white heron and the smaller black-crowned night heron, who destroys large numbers of rats and mice. Two cocoi herons are shown at the right.

Photos by N. Y. Zoological Society

STRANGE FEATHERED FOLK OF THE MARSHES

Presently the tapping stops, to be followed by a loud "ooble-oob! ooble-oob!"—just like water pouring out of a very big jug. This strange sound tells us that a bittern is concealed in that patch of reeds and grasses over there, and in his own peculiar way he is calling for his mate—or perhaps he is sending forth a defiant challenge to other male bitterns on the marshes, who boom back that they are quite as good a man as he!

On account of the tapping noise he makes and his deep, rumbling "ooble-oob, pumper-umke," the bittern is sometimes called the "stake driver" or the "thunder pumper." He is a solemn bird, living alone in solitary state in boggy places where it is not at all easy to visit him; so we are much more likely to hear than see this mysterious inhabitant of the marshes.

Even if we do track

him down in his favorite haunts, we are quite likely to pass him by without ever seeing him. For although the bittern is such a big bird—over two feet tall from the tip of his beak to his toes, when he stands upright—his brown and buff feathers, which are arranged in stripes down his long neck and breast, match the lights and shadows among the tall brown reeds so exactly that in his own home the big bird might be wearing a magic cloak of invisibility.

If disturbed in his retreat, the bittern does not at once flap his wings and fly off in a hurry. He just "freezes"—that is to say, he stands stock-still. With his beak pointing skyward and his long neck stretched out, he faces the intruder, so that his brown and yellow stripes blend with the brown and yellow leaves all round him. You may almost tread on the wily bird before he attempts to move.

But if you do see him and the bittern knows he



by N. Y. Zoological Society

All these creatures like to get their feet wet. The Goliath herons at the top are watching us with a good deal of suspicion. At the extreme left is an upeccalian rail. In the center are a pair of Colombian curassows, who are related to the turkeys. At the right is a kagu from New Caledonia, an island in the Southern Pacific.



STRANGE FEATHERED FOLK OF THE MARSHES

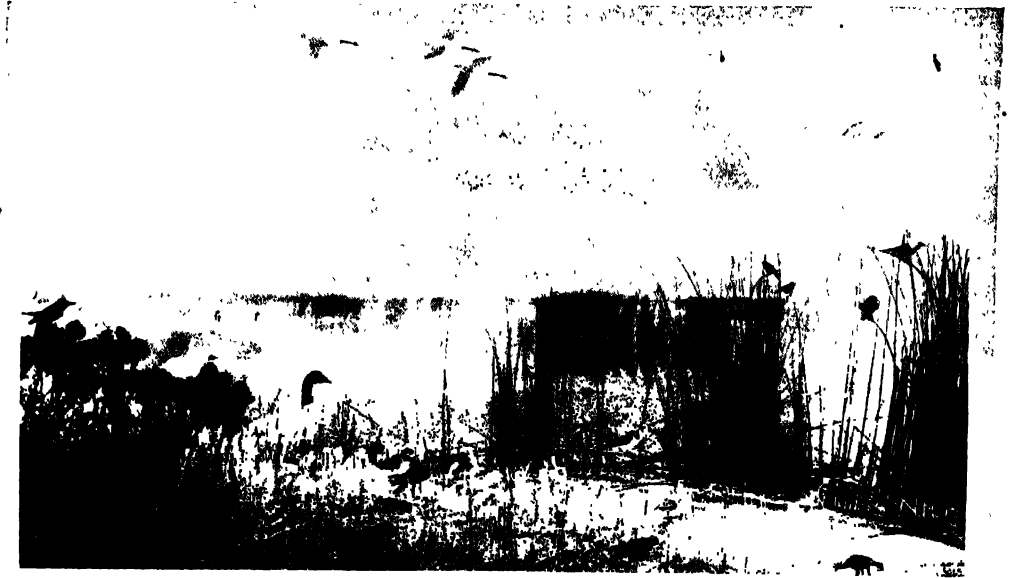


Photo by American Museum of Natural History

Many of these birds may look familiar to you, for in the summer we shall find them breeding in North America. But when the ice fills the marshes, off

they go to the South. Here in the lagoons of lower South America we find avocets, geese of many kinds, and blackbirds closely related to our own.

is discovered and thinks he cannot get away—*be careful!* He will draw his head back like a snake and make a lightning thrust at you with his dagger-like beak. He will strike at your eye if he can reach it; so it is far wiser to keep well out of range of his dangerous weapon.

As a flyer the bittern is not particularly expert or graceful. He prefers to stalk about the marshes on his long legs, amusing himself by fishing in the shallow water for tadpoles, little fishes, and crayfish. He catches frogs and salamanders on the edge of streams and pools, and digs in the mud for all sorts of small creatures that lie hidden there. He can run very fast over swampy ground, for he has remarkably long toes which make walking or running on soft, oozy mud an

easy matter. So he is at home in the marsh.

When he wishes to change his feeding ground, the bittern springs clumsily into the air, and with his head drawn back on his shoulders and his long legs trailing behind him he flaps his way to another part of the marshes.

The nest of this strange bird is made of grasses and rushes and is hidden on the damp ground in a reedy jungle. It is often placed right in the middle of a bog, where no one but the furred and feathered marsh folk can get near it. Here the mother bird lays four or five pale, olive-buff eggs and sits on them for nearly three weeks. Then the baby bitterns crack their shells and struggle out into the world. And funny little objects they are! When four or five days old the little birds are



Photo by N. Y. Zoological Society

This is a "close-up" of the paradise crane. Notice how smoothly the feathers lie on its head, and how slender and tapering the neck is. Cranes are the largest of wading birds.

STRANGE FEATHERED FOLK OF THE MARSHES

covered with long, pale-brown downy feathers, which wave about and blow over their faces. They look like little polliwogs. It is quite ten weeks before they are able to use their wings.

The young bitterns are most quarrelsome little birds. If anyone attempts to

not able to fish for his food, he moves further south. He does not, as a rule, fly further than is necessary, though some bitterns travel through Mexico and Central America as far as Guatemala.

Another bittern, called the "least bittern," also lives in marshy districts in most parts of North America. He is smaller than the big boomer,

measuring only sixteen inches from the tip of his beak to his claws. Like the "great bittern" he is dressed to match the reeds and rushes among which he spends the summer days, but the feathers on his crown and back are black and there are reddish-brown patches

touch them they throw themselves on their backs, kick with their legs, and strike out with their beaks for all they are worth. But unless they are taken unawares, at the first hint of danger the young bitterns slip quietly away among the reeds and hide until all is safe again.

The bittern is known in many parts of Europe, Asia, and Africa, as well as in America, but in the Old World the birds are rather bigger and a little darker in coloring. Their loud, booming cries have attracted attention from earliest times. People used to imagine that the birds thrust their long bills into the water or into a reed to make the strange sound. But this was a mistake! When the bittern booms he just stands upright among the reeds, with his bill pointing to the sky.

The North American bittern makes his home in the fens and marshlands in most parts of the continent from Southern Canada to Arizona and California. In winter, when ice covers the pools and streams and he is

on his wings. At home he is well disguised.

The least bittern does not boom. He makes a rather pleasant cooing sound when calling to his mate. He lives much as his big relative does, walking about in swampy jungles, feeding on insects, fresh-water shrimps, snails, frogs, and tiny fishes, and instantly "freezing" if anything alarms him. Like the big bittern he will jab at an enemy with his sharp bill if his ruse is discovered.

Bitterns belong to the heron family, a tribe of wading birds with long legs which are just right for paddling in shallow water. They have long daggerlike beaks for spearing

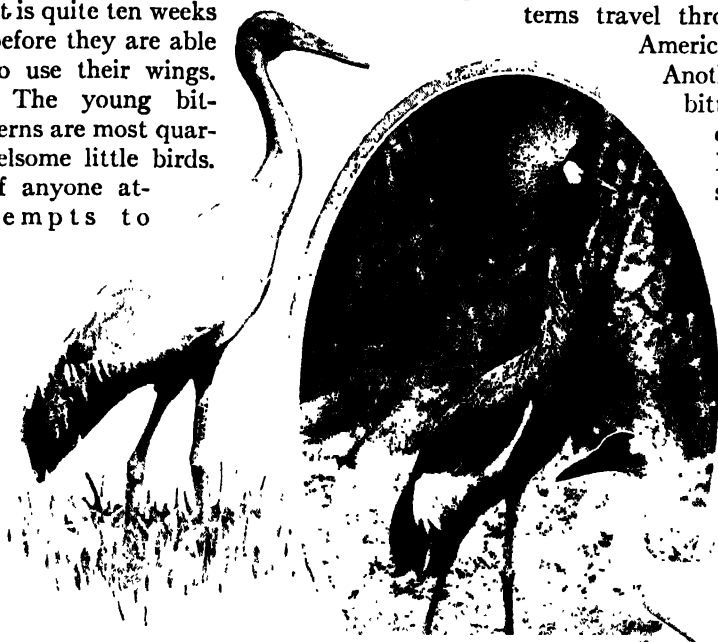
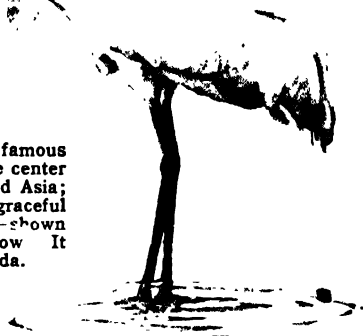


Photo by N. Y. Zoological Society
The Australian crane at the left is famous for his friendly disposition. In the center is the crowned crane of Africa and Asia; it is an accomplished dancer. The graceful whooping crane of North America—shown at the right—is almost extinct now. It breeds in lonely spots in Canada.



STRANGE FEATHERED FOLK OF THE MARSHES



Photo by American Museum of Natural History

When the Pilgrim Fathers came to this country they found the sand-hill crane in large numbers. Like many other birds which were used for food, these

the little fishes in pools and streams, long toes to enable them to run about easily on muddy flats, and very short tails, which are much the most convenient kind for birds that are constantly wading in the water.

In the early morning and evening hours the "great blue heron" is often to be seen flapping his way across country, with his head drawn back and his legs dangling in the usual heron way. Slowly and lazily, it seems, he flies through the air; yet he is not so slow as he appears to be, for it has been calculated that a heron can travel at the rate of thirty-five miles an hour.

How Tall Is the Great Blue Heron?

The great blue heron is even larger than the booming bittern. He stands some forty-eight inches high on his long, lanky legs, when he stretches his neck and raises his bill skyward just before he starts off on his flight. His plumage is a soft bluish-

noble cranes were exterminated in New England. In our own times they breed in lonely places in Florida and on the marshes of certain western states.

gray, his beak is yellow, his legs are black, on his head is a crest of black feathers, and a soft flowing, feathery cravat adorns his long neck. So, altogether, you will agree that the great blue heron is a very fine bird.

Where the Heron Makes His Home

This heron does not live entirely on the marshes, as the bitterns do. He prefers to roost in the trees in woods and thickets, and fly backward and forward to his fishing grounds in the early morning and late afternoon. He knows where to find plenty of little fishes, frogs, and other small water creatures; and he will stand motionless for hours on the margin of a lake, stream, or river watching for his prey and spearing it with his beak. Or he will stalk about the muddy shores with slow, stately steps, stopping every now and then to seize and swallow any little waterside creature that takes his fancy.

STRANGE FEATHERED FOLK OF THE MARSHES



by An of Natural History

Grebes form one of the most primitive orders of birds. They cannot walk well on land, so the nests are placed so that the birds can slip off into the water, where

they are quite at home. The birds above belong to two species, the large Western grebe and the small-eared grebe, which is shown in the front center.

For most of the year the blue heron is rather a solitary fellow. He prefers to keep his own company and fish when and where he likes without being bothered by a whole tribe of friends and relations always fussing around. But in the nesting season he grows more sociable. Sometimes as many as a hundred pairs of these great birds will build their nests close together among the upper branches of a group of tall trees.

The heron's nest is nothing more than a rough platform of twigs and sticks which are not always put together very carefully. A story is told that on one occasion a pair of herons built their nest in such a haphazard fashion that every time one of the birds jarred the nest a stick fell out. So day after day the nest grew smaller and smaller, and at last, when the baby birds were just ready to fly, only three sticks of their nursery remained for them to cling to!

The great blue heron is often called the "blue crane." But this is wrong. He is a true heron, although he is very much like

the long-legged cranes in appearance. He is the largest of the true herons found in America. We may make his acquaintance on the marshes by lakes and rivers in many parts of the continent from Canada in the north to Panama and Venezuela in the south.



Photo by H. E. Z.

On this mass of floating vegetation the grebe lays her eggs. If a storm comes up the brave mother grebe may be seen riding the waves on her raftlike home. Often this grebe will nest in colonies in the middle of a lake.

The green heron, the smallest North American heron, is, however, far better known than his big blue cousin. For he is quite as much at home by a running brook, a quiet pond, or a little winding creek as he is out on the northern marshlands or the lonely swamps and lagoons down south.

Green herons will even build in an apple orchard sometimes, or in a clump of trees in the farmer's fields. So although he is a shy bird and never grows familiar with us, most country folk know the little green heron.

They often call him by some funny name, such as "fly-up-the-creek," "shite-poke," or "chucklehead."

"Green heron," by the way, is not a very good name for this bird, for in his plumage there are many colors. His long neck is a

STRANGE FEATHERED FOLK OF THE MARSHES

purplish red with a white stripe down the throat, and a fall of long soft grayish plumes from his shoulders covers his back like a cloak. Only his wings and crown show any green and they are very dark.

A Favorite Sport of the Green Heron

Like other members of the family the green heron spends much of his time fishing in shallow ponds and streams. He will stand for a long time on a half-submerged log with his head drawn back, intently watching the water, all ready to plunge his beak below the surface and seize a minnow, a frog, or a tadpole as it swims past. He is sometimes so engrossed in this sport that you may creep up quite close to him if you move very quietly, but the moment he discovers that you are watching him he flies up with a loud squawk and beats a hasty retreat.

The "black-crowned night heron"—or the "quawk," as he is often called—is not so well known as his green cousin, for he rarely goes out fishing until after the sun has gone down. But the loud, hoarse squawk of this mysterious bird is often heard at night in marshy districts as he flaps his way through the darkness to his favorite fishing ground. He is a fine-looking bird, dressed in light gray with a greenish-black cap and cloak. His cap is adorned with two very long and fine white plumes which sweep gracefully over his back.

Night herons usually nest in colonies. Their nests, made of sticks, are as a rule fixed on the topmost branches of tall trees. But occasionally, when there are no convenient trees within easy reach of a good fishing pool or stream, the nests may be placed in low branches or even on the ground in marshes.

Several other members of the heron family are natives of North America, but we must leave these interesting birds

for the time, as there are still any number of feathered folk on the marshes and on the shores of the lakes and rivers—rails, crakes, and plovers, water hens, coots, and grebes, to say nothing of all the different kinds of wild ducks.

The rails are true birds of the marshes. In every tangled forest of sedges, cat-tails, rank grasses, and waving reeds there are almost sure to be some of the rail family living a hidden, mysterious life of their own. They are very shy. Although you may hear their croaking voices—"krek, krek, kuk, kuk, kuk"—on all sides, they keep so close under cover that we can seldom catch a glimpse of the little "mud herons," as they are often called.

The Thinness of the Rails

In the damp, dark underworld the rails follow long, winding tunnels through the water plants. Down these corridors they run very fast when any four-footed, fur-coated tyrant of the marshes is on their track. They have wide-spreading toes, and so do not slip and slide, or sink into the oozy mud when they run. These birds are so surprisingly thin that they can squeeze through the thickest masses of reed and grass stems with no trouble at all.

At night time, or sometimes early in the evening when they are quite sure no one is about, the rails will peep out cautiously from their secret haunts and come out in the open to paddle about on the edge of the

water and dig wriggling things out of the mud with their short sturdy bills. They eat worms and insects of all sorts, as well as snails, polliwogs, and other small water creatures, and bits

of some of the water plants. If they are disturbed when enjoying their supper the rails flutter away across the pool in a violent hurry and drop down out of harm's way among the flags and weeds.

These birds can swim very well, but they fly rather

This is the "dabchick," or pied-billed grebe, the only member of his clan who commonly nests in the eastern part of the United States. But if you go to his home, you will find it hard to discover him.

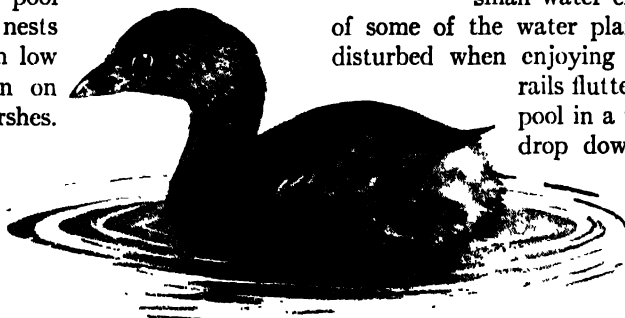
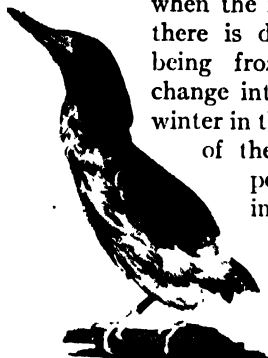


Photo by A. A. Allen

STRANGE FEATHERED FOLK OF THE MARSHES

clumsily, with their long legs dangling below them. Yet in spite of this, they travel long distances to warmer parts of the continent when the nights grow cold and there is danger of the marsh being frozen. They do *not* change into frogs and pass the winter in the mud at the bottom of the ponds, as ignorant people used to suppose in days gone by.



There are many of these cautious marsh birds who spend all summer and build their nests in the northern states. There is a black rail and a yellow rail, the Virginia rail who asks for your ticket, and the sora rail, which is perhaps one of the best-known members of the rail family.

The sora is a smart little bird. Its olive-brown feathers are laced with black and white, its breast is white barred with dark stripes, and its perky turned-up tail is white underneath. Its usual call—it can hardly be called a song—is “ker-wee, ker-wee!” but sometimes the bird, who is very talkative, makes a “peeping” sound, rather like a tiny chicken, or gives a high, shrill “whinnying” cry.

The Lively Young Rails

A rail's nest is usually a shallow basket or platform of grasses, weeds, and rushes slung just out of reach of the water. The parent birds almost always bend the reeds together over the nest to make a roof and hide the precious eggs from crows and grackles flying over the marshes. Baby rails are wide awake and kicking the minute they burst their way out of their shells.

They are most absurd-looking little creatures, like fluffy black balls—the soras with a light red lump on the base of their wee pink bills. Almost at once they are able to run about on their sticks of legs and funny splay feet, and if anything alarms them the precocious youngsters just pop into the water and swim away as fast as they can go.

The shy little water chicken you will know by the red shield on its forehead, the red garters round its green legs, and the funny way it has of bobbing its head as it swims across the pools. The coot is a dark bird, rather like the water chicken, but it is a little bigger and has a conspicuous white bill.

Both birds are thoroughly at home on the water, especially the coot, who is almost like a duck in its ways. The water chicken leads an independent life in the

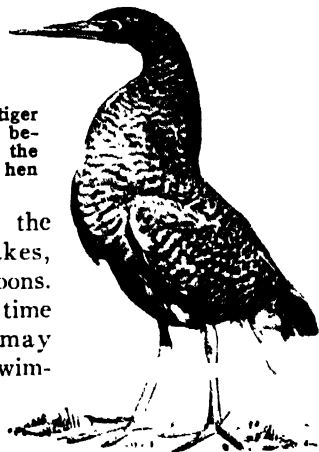


Photos by A. A. Allen and N. Y. Zoological Society

On the left is a zizag bittern, on the right a tiger bittern. As you might suspect, the bitterns belong to the heron family. In the center is the purple gallinule. He is often called a mud hen and is closely related to the coot.

marshes or on the borders of lakes, streams, and lagoons. In the summer time the mother may often be seen swimming proudly, followed by her excited

little brood of chicks. The chicks swim almost as soon as they are hatched and thoroughly enjoy paddling round in the pools and running over the floating lily leaves. While they are playing about, mother keeps a sharp lookout for any sign of danger, and at her low, warning “cr-o-o-k, cr-o-o-k” the tiny things at once hide under the leaves or dive under water, with only the tips of their wee beaks showing above



STRANGE FEATHERED FOLK OF THE MARSHES

the surface. But alas! danger lurks below as well as above the water for young water birds of all kinds, and many a baby water chicken, coot, and rail is seized and swallowed by a water snake, a turtle, or a great greedy pike.

Coots are quite sociable in their ways, and when their nursery cares are over for the year the birds are often seen swimming together in large flocks. If anything upsets them they all cackle at the top of their voices, making a most terrific noise. Then all at once they will rise and skim along the top of the water, their feet making a pattering noise on the surface that sounds like a heavy shower of rain. Both water chickens and coots make the usual kind of flat rush basket for their eggs, close down by the water, on the borders of the marshlands. Sometimes the nest is almost *in* the water, floating like a raft on the edge of a pool, in the middle of a thick clump of weeds.

"Wup-pup-pup-pup-caow-caow-caow!" comes a strange call across the marshes from one of the big pools surrounded by a deep fringe of waving flags. It is the plaintive voice of the pied-billed grebe, one of the diving birds; he is calling to his mate.

A cunning bird is the grebe. On the shore it is not very graceful, for its short legs are placed so far back that it stands almost erect, like a penguin, and it waddles about in rather an awkward manner. But on the water the grebe is quite at its ease, and there it spends most of the day and the

night as well, coming on land just as seldom as possible. It is really a wonderful swimmer. Its long flat toes are bordered by narrow webs, which are joined only at the base; so its feet make excellent paddles. It swims and dives and turns somersaults in the water; and if anything startles the bird it simply

vanishes! Then when you are wondering what has become of it, up it pops quite a long way off from the spot where it disappeared. The grebe is able to play this trick on you because it can swim under water, pushing its way quickly and easily through the matted tangle of weed stalks below the surface of the pool. Because of the astonishing way in which it suddenly disappears and then reappears in a totally different place, the grebe is often called the "hell-diver" and the "water witch."

Grebes even make their nests in the water—sometimes floating on the surface, firmly anchored to the reeds or a log that has fallen into the pool, sometimes built up in the shall-

ows, like little islands with the water flowing all round them.

Both the father and mother grebe help in building the nest, which is just a piled-up mass of decaying water weeds. It looks like a heap of rubbish thrown up by muskrats. And when the mother leaves the nest for a swim, as she often does, she carefully scrapes some of the rubbish over her eggs to keep them warm and safe from prying eyes, while she is away from home.

When the eggs are hatched the two old



Photo by American Museum of Natural History

Our least bittern is doing her best to look as much like the reeds and cat-tails as possible—and she is making a very realistic job of it. Bitterns, if they remain motionless in this position, are nearly invisible

STRANGE FEATHERED FOLK OF THE MARSHES



With trumpetlike calls these beautiful whooping cranes have alighted in the marshes. There they will build their rude nest in the very same spot where they built it last year and the year before, and in it the mother will lay two brown eggs ornamented with spots of a darker tone. Cranes are among the most beautiful of the wading birds and have long been loved of

birds bustle about, catching fish and insects to feed their funny little nestlings, which are like small dusky balls of down, speckled with white. But before long the chicks are taken out on the water. They ride on their parents' backs, where they cling fast to the feathers with their tiny claws. The father and mother are very careful of their children, and if they suspect danger they cover them with their wings and sometimes even dive under the water holding them in this strange fashion.

In this way the young grebes learn not to be afraid of the water, and they are soon able to swim and dive and play the vanishing trick quite as cleverly as father and mother.

Six different members of the grebe family make their home in the marshes, or on any

artists. On many a Chinese screen you will see a graceful flight of cranes. These great birds cover enormous distances on the wing. Certain European varieties spend the winter months in the jungles of Central Africa, but with the coming of spring they mount high in the sky and in ordered array wing their way sometimes as far north as Lapland.

pond or lake where reeds and rushes grow. They all have beautiful glossy feathers in soft shades of brown, chestnut, and white, and on that account the poor birds are too often hunted and shot. There is a black-necked grebe, a big red-necked—or Holboell's—grebe, and a horned grebe with a black crest and a golden ear tuft. But best known is the pied-billed grebe, whose curious black and white bill is much shorter and heavier than is usual in this bird family.

There are several grebes living in the Old World, too. The "great crested grebe," with its long ear tufts and big chestnut ruffle, is a most imposing bird, while the smallest of all the grebes, the "little grebe," or dabchick, is a familiar water bird in the rivers and marshes of England.

The STORY of BIRDS

Reading Unit No. 13

BIRDS THAT LOVE TO WADE AND SWIM

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

How the woodcock lives, 4-113-14
Snipe, sandpipers, and killdeer, 4-114-17

Dabbling ducks, 4-118-19
Diving ducks, 4-119-20
Wild geese, 4-120-22
Loons, 4-122

Things to Think About

How does the woodcock use his long bill?
How can one distinguish between plovers and sandpipers?
How does the killdeer protect his mate from enemies?

What are some of the characteristics of the dabbling ducks?
What food do ducks look for?
How can we recognize a flock of flying geese?
How did the loon get its name?

Picture Hunt

What is a cygnet? 4-113
How does a snipe resemble a woodcock? 4-114
Of what use are a killdeer's stripes? 4-116
What makes it possible for a stilt to wade? 4-117

Which is the handsomest duck?
Color plate opp. p. 4-120
What kind of feet do ducks have?
Color plate opp. p. 4-120
Which duck is hunted a great deal? 4-121

Related Material

Which birds are commonly found at sea? 4-200-8
Which sea bird has been wiped

out by ruthless hunters? 4-205

Leisure-time Activities

PROJECT NO. 1: In the spring, visit a marsh, swamp, lake, or sea-

shore. How many birds can you identify? 4-113-22

Summary Statement

Many birds live near water or on it. They have webbed feet for swimming or long stiltlike legs for

wading. Our commonest shore birds are ducks, sandpipers, plovers, and snipe.

BIRDS THAT LOVE TO WADE AND SWIM



Photo by N. Y. Zoological Society

Swans are the most graceful of swimmers. In this country we have two species, the whistling swan and the trumpeter. The latter is now nearly extinct. This

mother and her downy cygnets are known as the European mute swan. This is the species usually found in captivity, even in America.

BIRDS THAT LOVE *to* WADE *and* SWIM

Unless You Have Startled a Flock of Ducks and Have Seen Them Rise Swiftly into the Air, You Do Not Know How Beautiful a Reedy Shore Can Be

PUT on your rubber boots some day, and your oldest clothes, and armored with all the patience you possess, seek out the muddy border of some lake or stream. If you can keep your soul in peace until the shy feathered citizens of the place have grown used to having you around, you may see sights as charming as any you are likely to run across in many a long day. For there you can make the acquaintance of many interesting and beautiful birds that never visit our lawns and orchards. You will see the capable ducks and the dainty sandpipers; and if a storm is brewing, you may even hear the cry of a loon, echoing, wild and strange, across the water.

One of the birds you will be happiest to discover is the plump little woodcock, with its great round eyes and surprisingly long, straight bill. He will not be found in the ponds and streams, for the woodcock is no water bird. He delights in boggy marshland overgrown with stunted trees and

bushes and damp, sodden thickets, where you would sink to your ankles in the mud if you attempted to call upon him. A shy, solitary little creature, he might be called the hermit of the bogs, for he spends his days in strict retirement and does not leave his damp and gloomy haunts until so late in the evening that few people know him even by sight.

When he rests on the ground in the shadows you might almost stumble over the woodcock without perceiving him. For his mottled plumage of light and dark brown, buff, gray, black, and white is hardly distinguishable from the crumpled dead leaves on which the bird takes his noonday rest. The only thing that may give him away is his big shining eyes which glisten like glass beads in the half light.

The bird's strange long bill is not just a freak of nature. It is the woodcock's tool whereby he earns his living. Pottering about on the soft quaking ground, he pauses every

BIRDS THAT LOVE TO WADE AND SWIM

now and then, plunges his beak right up to the hilt in the mire, and triumphantly brings to light a long wriggling worm that was hidden in the mud. Earthworms are the woodcock's favorite food, but he enjoys all sorts of soft fat grubs which bury themselves in the moist earth, and he will pick

wooning his mate; at other times this strange little hermit of the marshes is a curiously silent bird.

The Careful Mother Woodcock

The little female woodcock makes her nest of dry leaves and grasses on the borders of marshy woodlands. She is a most devoted mother, and is said to carry her little ones occasionally by tucking them between her toes and her breast, so that they ride on her spread-out feet. Then she teaches them how to use their slender beaks and probe in the mud for their supper.

The woodcock belongs to the plover tribe, a tribe of marsh and shore birds which includes the plovers, snipes, sandpipers, and curlews.

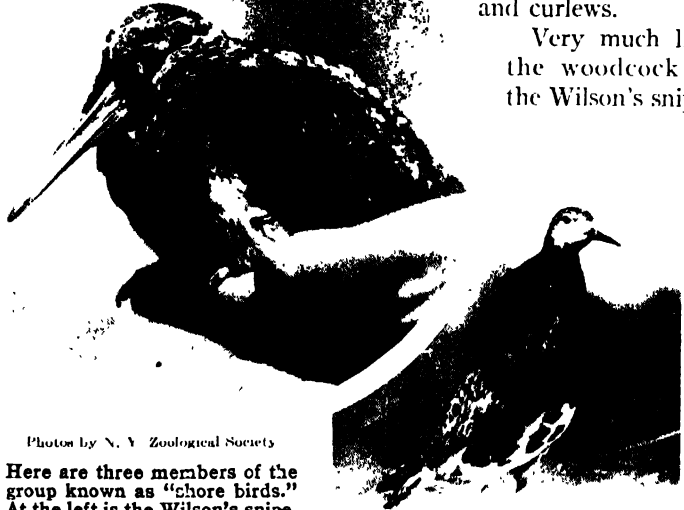
Very much like the woodcock is the Wilson's snipe.

up a beetle, a long-legged spider, or any other small, soft-bodied creature that runs about on top of the ground.

When moving from one place to another the woodcock generally flies low, keeping as much as possible under cover of the trees. Yet sometimes in the dusk he will mount toward the sky, fanning the air so rapidly with his wings that it whistles through his narrowed flight feathers and makes a curious winnowing or chipping noise as he goes. When almost out of sight the excited little woodcock, chipping with his wings and crying "quit! quit! quit!" sweeps round and round in big circles until he tires of the performance and comes volplaning down to earth again in a headlong, zigzag flight.

The Woodcock's Love Song

This is the woodcock's love song, which is heard only in the springtime, when he is



Photos by N. V. Zoological Society

Here are three members of the group known as "shore birds." At the left is the Wilson's snipe. The woodcock in the center is very tame, and when she is sitting on her eggs will allow you to come quite near, for she knows that you are unlikely to see her against her russet background. The lanky creature on the right is the European ruff.

You would guess at once that the two birds were cousins. They have the same mottled plumage of brown, black, and buff, and both birds have remarkably long, straight bills. But if you look closely at the snipe you will notice that, although he is nearly as long as the woodcock, his weight would clearly be hardly more than half as great. The snipe's eyes, too, though big and bright, are not such huge shining lamps as

BIRDS THAT LOVE TO WADE AND SWIM

the woodcock's, and his waistcoat is white instead of golden brown.

One usually looks for snipe on weed-grown mud flats or by the margin of lakes, rivers, and estuaries; but the Wilson's snipe prefers to live in damp marshy fields and meadows, where he can hide among the tussocks of coarse grass. Although, like his cousin the woodcock, he is shy, wary bird, he is more often to be seen about in the daytime, probing with his long beak in the moist ground for something good to eat. If you disturb him while he is feeding the snipe will spring into the air and fly off in a zigzag manner with a loud, rasping "scape! scape!" Sometimes when he is flying he makes a curious bleating noise—like the winnowing of the woodcock—which is supposed to be caused by the wind whistling through the stiffened outer feathers of his tail.

Toward the end of the summer there are always a great many birds on the marshes and down by the lakes, estuaries, and rivers. By this time there are sure to be numerous young birds about, learning to be independent before they set off on their first long journey to the southern shores. And all through August and September troops of wading birds that have nested as far north as Alaska or Labrador keep flocking in to increase the population.

Running briskly over the mud flats on the marshes or down by the water's side are whole flocks of excited little plovers and sandpipers. "Weet-weet!" "Peet-weet!" "Weeta-weet-weeta-weet-weet-weet!" they cry as they merrily hunt shrimps, hoppers, Photo by N. Y. Zoological Society

and wee water creatures of all sorts over the wet, puddly ground. They are as noisy and happy as can be.

There are quite a good many of these dainty, long-legged wading birds; and except that some are larger than others, they all look so much alike that unless you know them really well, it is not at all

easy to distinguish all the different kinds—especially in the autumn, when the birds are all wearing their traveling suits of soft brown and gray feathers.

One thing to remember is that plovers have rounder heads and shorter, stouter beaks than sandpipers. And plovers have only three

toes while sandpipers have four—though of course you cannot see their toes very well while the birds are running about on the shore. But if you look at the tracks the little birds make on the mud or sand you will very likely be able to tell whether they belong to plovers or sandpipers.

Most wading birds are great travelers. They spend the warm spring and early summer days on the moors, marshes, and tundras far up in the north. There they make their nests and bring up their children. Then, as soon as the short northern summer is over, they gather together in flocks and start off on their southward journey.

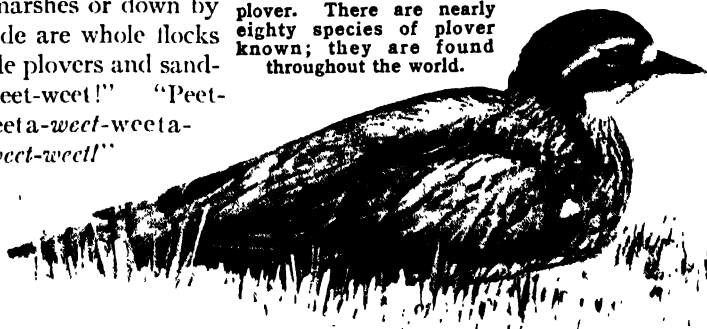
Some, like the golden plover, fly all the way from Labrador to Argentina; others travel to Mexico, or spend the

winter in the gulf states, where large numbers of pretty wading birds may be seen running about the seashore at low tide, busily hunting



This Wilson's plover is returning to her simple nest. The little bird breeds along the eastern and southern coasts of the United States from New Jersey to Texas.

Below is the Australian stone plover. There are nearly eighty species of plover known; they are found throughout the world.



BIRDS THAT LOVE TO WADE AND SWIM



Photo by American Museum of Natural History

The upland plover has forsaken the tidal flats of his ancestors and has gone to the meadows. He is not a

true plover, but closely related to the little sandpeeps. The charming bird is now becoming rare.

in the pools and among the heaps of seaweed for wee crabs, shrimps, sandhoppers, and other tiny seaside creatures.

Among them we may pick out, by his size and his bright yellow legs, the "greater yellowlegs," a fine upstanding bird who bows politely to you from the water's edge but flies off in a hurry with a clear, flutelike whistle if you venture too near. His cousin, the "lesser yellowlegs," who is just like him only a few inches smaller, is quite likely to be one of the company too, for they are often together.

Then there are the charming little sandpeeps, the smallest of all the sandpipers. From July to August they are often seen in hundreds trotting about the beaches. They are

among the prettiest of wee birds, in their soft gray and white or brown and white suits. They run very fast on their thin little legs, and if anything startles them they rise together in a cloud with little "peeping" cries, and come down again in a bunch further along the shore.

Rather bigger than the sandpeeps, and with more white in their plumage, are the sanderlings, restless little shore birds who feed close by the water's edge, chasing the receding waves to pick up the tiny sea creatures left uncovered by the tide.



Photo by A. A. Allen

The killdeer is one of the most familiar birds to the farmer's boy. In fact it is more often found inland than along the water fronts. When the young first step out of the egg they are colored exactly like their surroundings.

Of plovers (plūv'ér) there are many different kinds. The golden plover, the ring-necked plover, and the piping plover all come flocking to the marshes and beaches when cooler days drive them from

their northern haunts. For a while we see them busy on the shores and mud flats, and hear their wild cries as they circle overhead; then away they go still further south.

Best-known, perhaps, of all these wading birds are the spotted sandpipers and the killdeer plovers, for many of them do not fly so far north in the nesting season, but stay with us all through the summer.

The spotted sandpiper is not quite so big as a robin. You may know him by the large dark spots on his snowy waistcoat,

BIRDS THAT LOVE TO WADE AND SWIM

and by the funny way he has of nodding his head and jerking his tail up and down while he patters about the waterside. On account of this funny habit the spotted sandpiper is called the "tip-up" or "teeter-tail" in many parts of the country.

Little tip-up is not so fond of company as most waders, and never goes about with large flocks. He likes quiet inland streams best, although he often visits the shores of lakes, rivers, and sandy creeks. There we may see him "teetering" and hear his weak, piping "eeteel ectee!" as he hunts for his breakfast or supper. In the fall the little sandpiper loses his spots, but he does not stop teetering; so it is not hard to recognize him when you meet him.

The killdeer, like the spotted sandpiper, spends most of the spring and summer with us, so we have a better chance of making his acquaintance than we have of knowing most plovers. He is rather bigger than a robin, and may be known by the two black bands across his white breast and the smart white collar round his neck. Not only on the marshes and beaches is the bold little killdeer quite at home, but he is seen just as frequently running about the fields and pastures and plowed ground, where he makes himself useful by hunting insects of all sorts. His shrill cry as he wheels overhead—"kill-dee, kill-dee, kill-dee-dee-dee-

dee!"—is a familiar sound of the countryside.

The killdeer is a very excitable and noisy bird. He seems always to be fussing and scolding—especially when his mate is quietly sitting on her eggs right out in the open on a patch of rough, gravelly ground. If you chance to go near her, he will wheel round and round your head uttering piteous cries, as if he were badly hurt, and will flutter before you, doing all he can to lead you away from her.

The spot on which the female killdeer is sitting can hardly be called a nest. It is just a shallow depression scooped out in the ground and lined with a few pebbles. But it is the most difficult thing in the world to find, for the four buff eggs spotted with brown look just like pebbles, too; and the baby killdeer, when they are hatched, are quite as invisible as they crouch, in their dark, speckled suits, among the stones and clods of earth.

Besides the regular inhabitants and visitors to the marshes and beaches, there are certain rarer birds who are seen, as a rule, only on the wilder coasts and marshlands, or perhaps when they make a short call as they fly north or south in the spring and autumn. We may be lucky enough to see a flock of curlews on the seashore or on the marshes, or may hear their wild, mournful cry—"cur-loo-ee!"—as they wing their way overhead. They are fine birds, as big as the greater



Photo by A. A. Allen

The black-necked stilt is a very showy bird found in both continents of the New World. You can see that the stilt would be a good wader, with those long legs of his and that long bill.

This plate should help you to place a few of the shore birds. From left to right they are: the lesser yellowlegs, great yellowlegs, pectoral sandpiper, and stilt sandpiper.

Photo by American Museum of Natural History



BIRDS THAT LOVE TO WADE AND SWIM

yellowlegs; they have very long, slender bills curving downward like a scimitar.

Sometimes a party of godwits, on their way from the barren grounds in the north to distant Patagonia, may stay a few days with us. Like the curlews they have very long beaks, but the godwits' beaks turn up instead of down.

On the borders of the lakes on the western plains the hand- (äv'ô-sët) may still be seen, although in the eastern states

that they look like a wisp of smoke trailing across the sky, and sometimes flying so low that we can see the birds quite clearly and hear the beating of their wings. Others, when they see a tempting pool beneath them, pause in their flight to feed and rest a while. After cautiously circling the marshes two or three times, down they come, with their wings raised until they are nearing the surface of the pool. Then, spreading their tails and their webbed feet, they drop with a splash into the water.

All kinds of wild ducks visit the marshes in October and November. No matter how cold and disagree-

they are now very rare. These splendid wading birds measure nearly eighteen inches from the end of the short tail to the tip of the beak—which is very long and upturned like the godwit's. Avocets are snowy white birds with black stripes on their wings. Their heads and long, graceful necks, which are white during the fall and winter, are rust-colored during the summer, and their long legs and toes, which are partly webbed, are pale blue; for this reason the birds are often called "blue-shanks."

When Ducks Flock from the Cold North

The best time of all the year to see the ducks on the marshes is in October, for then flock after flock comes flying down from the cold north, eager to reach warmer southern climes before all the shallow pools they pass on the way are frozen over. Some of the travelers are in such a hurry that they do not stop to refresh themselves. They pass swiftly overhead, sometimes flying so high

able the weather may be they are perfectly happy so long as the pools are not frozen. When this happens on they go further south, until they find open water again.

First there are the dabbling ducks—the mallards, the black ducks, the baldpates, the blue-winged and the green-winged teals, pintails, shovelers, and wood ducks. They are all called dabbling ducks because they keep dipping in the shallow water for their food. You must often have laughed to see the ducks on the ponds in farmyards or parks as they stand on their heads with their tails in the air and paddle with their flat feet as hard as they can go while tugging at the water weeds with their yellow bills.



Photo by N. Y. Zoological Society

The handsome giant on the left is Bewick's (bü'ick) swan. The black-necked swan in the center is from Argentina. At the right is the trumpeter swan, one of the rarest of American birds.

BIRDS THAT LOVE TO WADE AND SWIM

For tame ducks, too, are dabbling ducks. They are almost all descendants of the mallard, the common wild duck not only of America but of the whole Northern Hemisphere.

The mallard is a fine bird, distinguished by his glossy green head and neck. That is to say, the drake has a green head and a beautiful feathery coat glistening with metallic tints of purple, green, and blue. The duck, his wife, is soberly clad in mottled rusty-brown feathers, with just a touch of blue or purple in her wings. Toward the end of the summer, when the birds moult, the drake loses his bright colors for a time, and until October, when he is once again resplendent, he looks almost exactly like his mate.

The black duck, sometimes called the black mallard, is not really black, but a dark mottled brown. It is one of the wildest of wild ducks, as hunters learn when they are out duck shooting. At the first alarm the bird is up and away, and it flies so swiftly that it is out of gunshot in a trice.

Quite as wide awake and as quick on the wing is the pintail duck, a graceful bird in an elegant suit of gray and white. It has a long slender neck and a long spike of a tail which it carefully holds above the water when it is swimming.

The teals are delightful little ducks, quick and graceful on the wing and able to run very quickly on the marshes without tanning their webbed feet in the weeds, as so many ducks do.

They are pretty, brightly colored birds, especially the drakes, who as usual are smarter than the ducks. We may distinguish the blue from the green-winged teals by the colors in their wings.

The shoveler is rather larger and heavier than the teal, and one of the most brilliantly arrayed of all the ducks. His suit is made of chestnut-red, bright green, white, and blue feathers. But the shoveler's chief distinction is the huge, broad bill with which it shovels up the tadpoles, shrimps, water snails, and insects from the top of

the water and scoops in the mud for the sake of seeds of water plants and any little creatures that may be hiding there. This remarkable bill has given the duck a great many funny names, such as swabblebill, shovelbill, spoonbill,

and cow-frog.

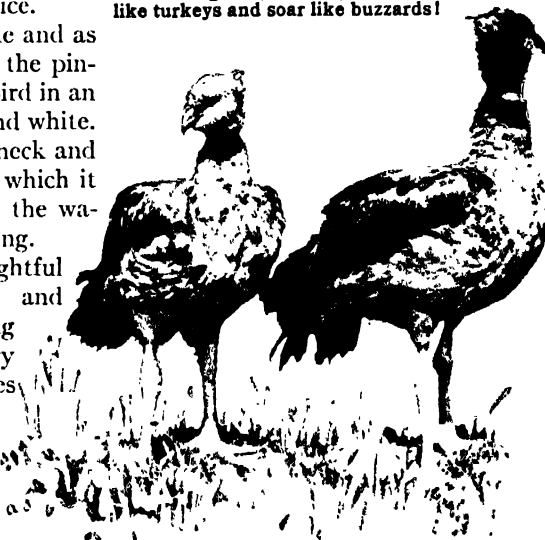
So many different kinds of ducks visit the marshes and inland waters of North America that we cannot possibly get to know them all in a short time. Besides the dabblers there are a number of diving ducks, who

instead of skimming the surface of the water or dabbling in the shallows prefer to dive for their food in deeper waters further out from the shore. The canvasback, the golden-eye, the funny plump little ruddy ducks and ruffle-heads, are all diving ducks. So are the scaups, who are sometimes called "raft ducks" because in winter huge flocks often



Photos by N. Y. Zoological Society

This black swan with the red bill is from Australia. For no good reason he seems to be hanging his head in shame. Below are crested screamers of South America. On each wing they bear strong spurs. These strange fowls are probably related to geese, but they have feet like turkeys and soar like buzzards!



BIRDS THAT LOVE TO WADE AND SWIM

float upon the water so closely packed together that from a distance they look like a big floating raft. The scoters, who come down from the north in immense flocks in October, pack themselves together in the same way. These ducks seldom stay long on the marshes. They fly on to the

seacoasts, where, even in winter, there is plenty of food for ducks who can dive for it.

All diving ducks have rather stout bodies and short necks. Their legs are placed rather far back, with the result that they waddle somewhat awkwardly on the shores; but they dive splendidly, and can stay under water for quite a long time. They cannot rise so quickly from the water as the dabbling ducks can; they always skitter along the surface for a short distance, making a pattering noise with their feet on the water before taking wing.

Lastly there are the mergansers (*mēr-gän'-sēr*), sometimes called fish ducks or sawbills; they have crests on their heads and rather long, narrow bills. Three of these ducks are North American birds, but the little hooded merganser is the only one we are likely to see on the marshes, for the American and the red-breasted mergansers prefer to fish in the sea or the larger lakes and rivers. Like the diving ducks the mergansers skitter along the top of the water before rising in the air.

Wild ducks are very quiet when they are journeying south in the autumn, although they usually have a good deal to say before settling down for the night on the marshes. Then you may hear them all quacking and calling to one another, as if they were discussing the events of the day.

The wild geese are exceedingly noisy birds. As soon as the waters of their summer home begin to freeze, they come flying down from the north, and you hear their loud "honk, honk, honk!" when they are still almost a mile away. They fly in flocks of half a

dozen or perhaps twenty, thirty, or more. Sometimes as many as a hundred geese travel together making a tremendous racket as they stream by, far over your head. One wise old bird always leads the

way, the others following behind one after another in two long lines that make a long, trailing "V" across the cold gray autumn sky.

The common wild goose, or Canadian goose, spends the summer on the marshes or by the lakes of Canada or in the northern states. Many pass the winter months along the coasts of the Atlantic from Long Island to South Carolina, while others fly to the lagoons of the Mississippi River, from Louisiana to Missouri,

where large flocks may often be seen feeding among the stubble in grain fields that often are far from the water.

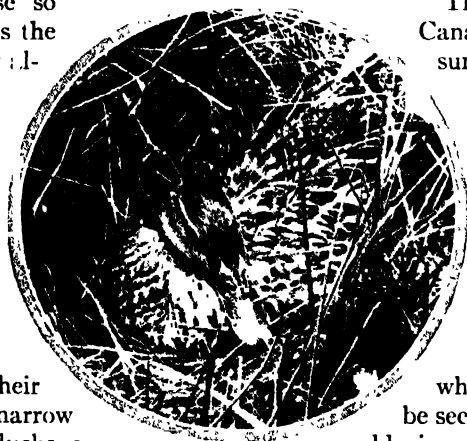
The beautiful emperor goose is not so often seen this far from its arctic home on the coasts of Bering Sea, although it sometimes visits the shores of northern California around Christmas time. It is a very handsome bird with a satiny gray coat—each feather marked with black and white—and a snowy white head.

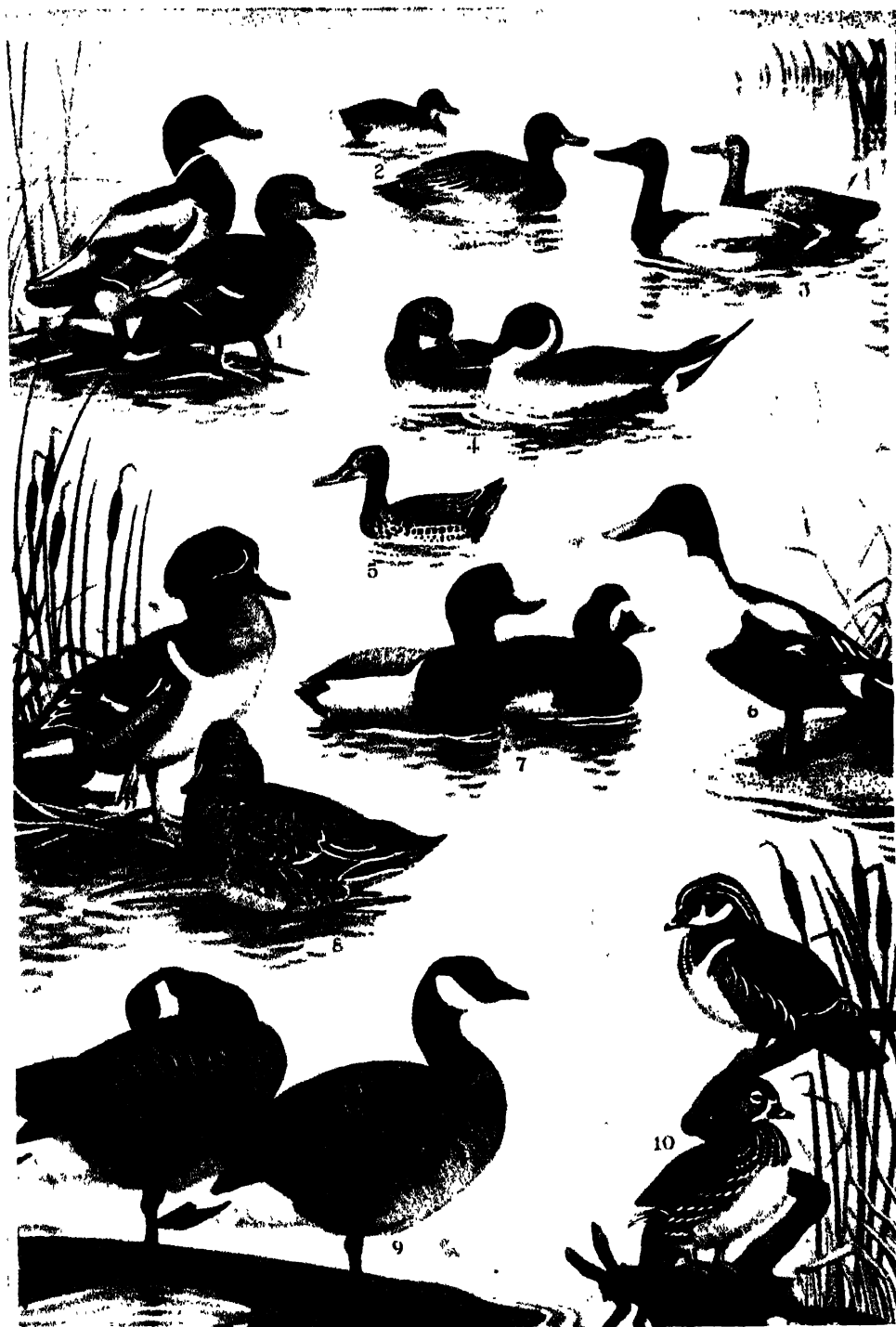
Noisier even than a honking goose, and almost as big, is the great dark loon, a wild, solitary bird that makes its home on some big lake set amidst the dark forests of the north. There he spends the summer days



Photos by U. S. Bureau of Biological Survey

Above is a graceful pintail duck. He is so named because of the long, slender tail feathers he wears. Below, a female mallard is on her eggs. Notice how she blends with her surroundings.





After Paintings Supplied by the National Association of Audubon Societies

Here is a page of water birds, all ducks except No. 9.
1. Mallards, male and female. 2. Redheads. 3. Canvasbacks. 4. Pintails. 5. Shoveler, female. 6. Shoveler, male. 7. Lesser scaup ducks, male and female. 8. Green-winged teals. 9. Canada goose, a close relative of the ducks. 10. Wood ducks.

BIRDS THAT LOVE TO WADE AND SWIM

No. 1. This Eyton tree duck sees something that may be good to eat!

No. 2. White-faced tree ducks are always easy to recognize because of the white masks they wear.

No. 3. This Canada goose has adopted another large family besides her own. All her children are doing well.

No. 4. The beautiful mandarin duck of Asia.

Nos. 5 and 6. These "canvasbacks" had better keep a sharp lookout, for there are any number of hunters who would be delighted to bring them home to be put in the pot.

No. 7. Are these birds swans or geese? They are sometimes called Coscoroba swans and sometimes Coscoroba geese, and are really a link between the swan and the goose tribes.

BIRDS THAT LOVE TO WADE AND SWIM

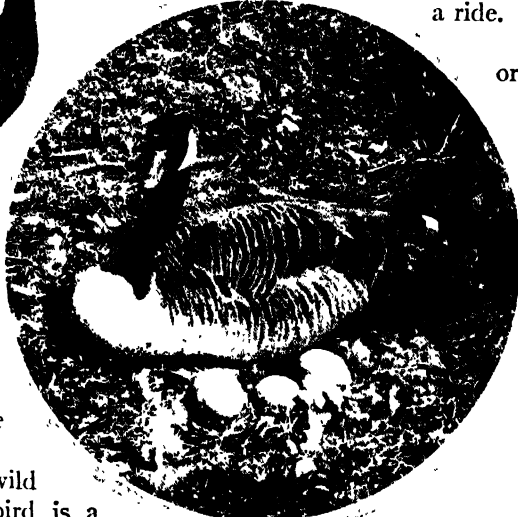
afloat upon the waters, swimming, diving, fishing, and making the echoes ring with his loud startling cries. He is noisiest at night, especially when a storm is brewing. Then through the fierce gusts of wind the loon's voice resounds across the water, sometimes wailing and shrieking as if he were in

other water creatures until they are able to fish for themselves. Young loons are precocious young things; they are out upon the lake, kicking their little webbed feet and trying to swim, when they are no more than a few hours old; but as soon as they are tired, they scramble on father's or mother's back, and there the parents give them a ride.

The loon belongs to the order of diving birds, and is cousin to the shy little grebe, or hell-diver, whose floating nest we may find on the marshes throughout

terrible distress, sometimes breaking into wild, crazy fits of laughter which can be heard nearly a mile away.

Yet in spite of his wild ways this strange bird is a kind, affectionate parent. In the springtime he and his mate make their nest on the ground close to the water's edge, or perhaps on a tiny islet where a muskrat may already have made its home. There the male and female loons rear one or two fluffy, black babies, feeding them on scraps of fish and

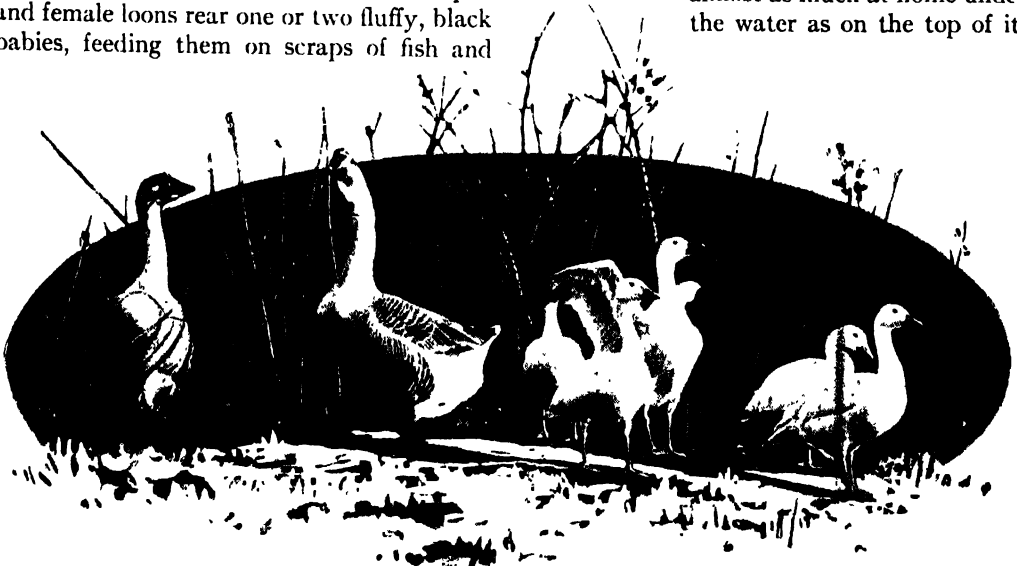


Photos by N. Y. Zoological Society

If these geese were not on the printed page we should hear a tremendous gabbling. In the center is a Canada goose; at the left and right, Magellan's upland goose. Below are snow and Chinese geese. The snow goose breeds in the tundras of arctic America.



the United States in early summer. He is the most famous of all the divers, and seems to be almost as much at home under the water as on the top of it.



The STORY of BIRDS

Reading Unit No. 14

BIRDS THAT BRAVE THE COLD AND SNOW

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

Birds that stay with us all winter, 4-124-25
The nuthatch, the upside-down bird, 4-125-26
How the brown creeper climbs a tree, 4-126

Sparrows that stay all winter, 4-126-28
The slate-colored juncos, 4-128-29
Arctic visitors, 4-129-30
The rare crossbills, 4-130

Things to Think About

What is meant by "winter residents"?
How does a nuthatch climb a tree?
Why is a brown creeper so interested in the bark of a tree?
Which sparrow sings all winter?

In what way are sparrows useful to man?
How can one attract juncos and other birds in the winter?
Of what use to the crossbill is its peculiar beak?

Picture Hunt

In building a bird house, what precautions must one observe? 4-124
What do birds like especially during the winter? 4-125-26
How did the Lapland longspur get

its name? 4-128
How can a crossbill get at pine seeds? 4-129
What legend is attached to the crossbill? 4-130

Related Material

How does a bird's beak determine its way of living? 4-151-57

How does the woodcock use its long bill? 4-113-14

Leisure-time Activities

PROJECT NO. 1: Build a bird house, 14-40
PROJECT NO. 2: Establish a

feeding station for winter birds, 4-126

Summary Statement

Some birds stay with us all year round and some appear only in the winter. The winter birds

may become friendly if fed regularly by a sympathetic bird lover.

BIRDS THAT BRAVE THE COLD AND SNOW



Photo by Nature Magazine

When building bird houses several points should be observed: Construct the box so that it is waterproof and free from drafts. One side may be hinged, so that the box can be cleaned every fall. If you wish to attract wrens, make the hole too small for the unde-

sirable English sparrows. Bird baths will also give our feathered friends great comfort. They should be shallow and have a rough bottom. Needless to say, they should be kept clean. Both bird houses and baths must be safe from prowling cats and bean-shooting boys.

BIRDS THAT BRAVE THE COLD AND SNOW

This Will Tell You of the Gay and Sturdy Birds That Brave the Cold and Snow to Spend Their Winters in the North

SUMMER has gone! Autumn too is passing. The countryside is changing from day to day. Every gust of wind sends showers of brown, crimson, and golden leaves whirling through the air only to fall when their short, mad dance is over. There, on the ground, they make a gorgeous carpet underneath the trees.

A perky towhee (tou'hē) who has been vigorously scratching away among the dry, rustling leaves flies up to a bough overhead with a sharp "chewink" and eyes us indignantly for interrupting his absorbing occupation of hunting for hidden worms and insects. Most of the summer birds started off on their long southward journey several weeks ago. Gone are the swallows, robins, bluebirds, and many another little feathered favorite we learned to know and love in the sunny summer days. But the towhee is not

in a hurry to leave his beloved woodland haunts. He will probably move further south when the days grow colder, or he may decide to stay where he is and brave the wintry weather.

A fine, bold, little fellow is the towhee in his tricolored suit of black, white, and russet-red. He is one of the smartest of the sparrows and finches, always active and full of energy at all times of the year, and quite well able to take care of himself.

Although our summer visitors have left us, there seem almost as many birds as ever flitting about in the woods and byways, the fields and orchards of the countryside. For not all our feathered friends have flown away. The flicker and the downy woodpecker, the cheery song sparrow, the nuthatch, the winter wren, the merry little chickadee and his cousin the tufted titmouse, as well as many

BIRDS THAT BRAVE THE COLD AND SNOW

other hardy birds who don't mind the cold, stay with us all the year round. And these "resident birds," as we call them, are joined by flocks of winter visitors who come trooping down from the north to spend Christmas with us.

It is now, when the leaves are falling from the trees, that we have the best chance of discovering a white-breasted nuthatch at home in his favorite haunts. For although he may have been living in the neighborhood all through the summer, the shy little bird hides himself away among the trees in the dense woods, and it is not easy to make his acquaintance. But in late autumn or in the winter time we may catch a glimpse of the small gray-blue bird with his white breast and black cap and very short tail. He will probably be climbing up and down the trunk of an old oak tree.

Up he goes in a series of brisk little



Photo by N. Y. Zoological Society

By patient waiting it is often possible to show birds we do not have designs on their lives, and to get them to be friendly with us. This little white-breasted nuthatch is taking a few seeds from the hand that has fed it all winter. Now it will fly away north. Not all birds eat seeds; so be sure to put out some suet for those of the meat-loving kind.

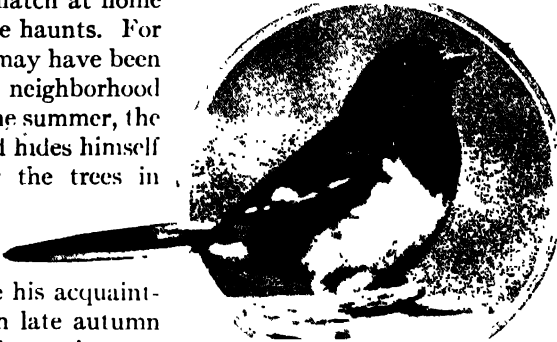


Photo by A. A. Allen

The towhee belongs to the great tribe of finches. All of them will be attracted by crumbs and seed if you scatter these dainties on the window sill. Salt is poisonous to birds; so be sure to keep it out of their diet.



Photo by U. S. Bureau of Biological Survey

The red-breasted nuthatch makes his home in the cool ever-green forests of North America. Here you will find his family high up in a hollow tree. The babies will be calling for food endlessly, and the poor parents will be kept busy scouring the forest for every available grub.

hops, stopping to poke his strong, pointed beak into every crack in the bark where he suspects an insect of hiding. Then he turns himself about and comes down again, head first—for he is just as happy upside down as right side up—and continues to explore every likely nook and cranny on his tree trunk.

The nuthatch fares very well in the autumn and winter; for besides the hibernating beetles, grubs, and insects' eggs he digs out of the bark, he eats seeds and nuts and acorns. We may sometimes surprise the clever little fellow hammering with his beak at a nut he has fixed in a crack in the tree in order the better to split the shell and get at the kernel.

When times are hard and food is scarce the nuthatch loses his shyness and will often come right up to the houses and help himself to the luxuries spread out on bird tables and window sills for our hungry bird friends. And being a thrifty little soul he will carry off quite a lot of the seeds and nuts he finds there and tuck them into cracks in the trees or holes in the fences, to be eaten another day.

In the early spring, before he goes back to his woodland haunts, the nuthatch may be heard singing his little

BIRDS THAT BRAVE THE COLD AND SNOW

laughing song—"ha-ha-ha-ha!"—as if he were rejoicing that the warm sunny days were coming again.

The red-breasted nuthatch, who spends summer further north, is also to be seen about in the winter. He is a wee bird, only four and a half inches long from his beak to his stumpy tail; he is more than an inch shorter than his white-breasted cousin. And as he wears a striped black and white cape and a reddish waistcoat you would hardly mistake one bird for the other.

The red-breasted nuthatch is more sociable in his ways, too. He often goes about with several companions of his own kind. He does not care much for insects, though he eats them now and then. He prefers seeds and nuts any day, especially the seeds of pines and spruces. So one of the best places to look for this bright little bird is among the trees in the pine woods, or in woods where plenty of evergreens grow.

Another winter visitor we may find climbing about the tree trunks is the brown creeper. You cannot mistake him for a nuthatch, since his coat is streaked brown instead of gray. His tail feathers, which are stiff, are used like a woodpecker's as he clings to the tree with his long claws; and he has a long, slender, and slightly curved bill.

How the Brown Creeper Climbs a Tree

This little brown creeper has a method of climbing all his own. Instead of climbing about the tree—up, down, sideways—as the nuthatches do, he starts at the base of the tree trunk and moves round and round it in a spiral, progressing by funny little hitches and jumps and calling "cheep, cheep, sweep, scree!" in a high-pitched, thin little voice as he goes. On the way up, this little mouse of a bird peers into the cracks and crannies

of the bark, stopping now and then to dig out a spider, an ant, or any other small insect he may spy. Then, when he reaches the top, he spreads his wings and comes sailing down to the foot of another tree and begins his upward corkscrew climb all over again.

In the spring the little brown creeper leaves

us for Canada or one of the states along the northern border. There it builds its cup-shaped nest of twigs, lined with finest grasses, softest plant down, or filmy cobwebs, tucking it cunningly behind a loose strip of bark on a dead tree or old stump where no one is likely to find it.

In spring and summer the brown creeper has a sweet little song that rises and falls plaintively in the air and then dies away like the soft wind sighing through the pine trees. Few people know this charming song, for the shy brown bird nearly always chooses a wooded swamp, far from the haunts of man, as its summer home.

Some of the great sparrow tribe are always with us—in summer and winter

alike. Though the field and the vesper sparrows and the friendly chipping sparrow, who builds its nest under the veranda, have flown, the song sparrow, bless his brave little heart, still sings on. We hear him trilling away as cheerily when the ground is covered with snow as in the first bright days of spring. And here, to join him, come a brave company of white-throated sparrows, tree sparrows, juncos, redpolls, and snow buntings, while those little gypsy rovers, the purple finches—who are just rose-colored sparrows, not purple at all—may be seen on many an autumn and winter day flitting up and down the hedgerows and through the thickets, busily hunting for seeds and berries.

All sparrows are great seed eaters and make themselves useful to us by destroying great



Photo by A. A. Allen

This little brown creeper has been attracted to the food we put out for him. The suet should be protected by wire, so that no bird will make a pig of himself and carry it all away. The small birds can easily put their bills through the openings.

BIRDS THAT BRAVE THE COLD AND SNOW

quantities of weed seeds. In autumn and winter, foraging parties of these independent little birds fly about the countryside, over the fields, along the hedgerows and the ragged weed-grown borders of woods and thickets, picking up all the seeds they can find and feasting on berries of all kinds.

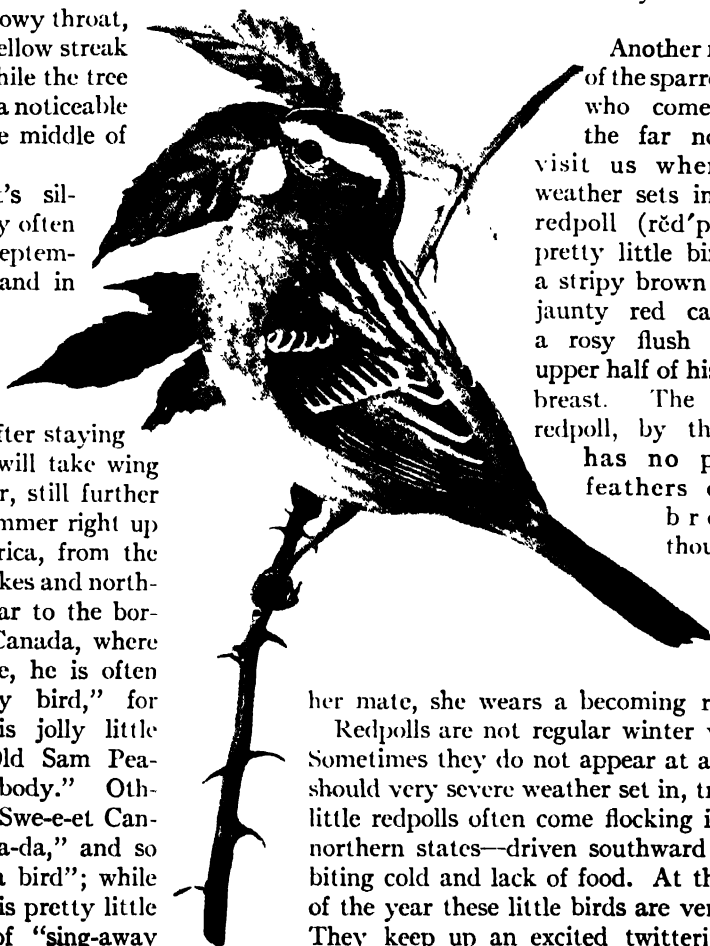
The tree sparrows, white-throated sparrows, and the song sparrows are all very much alike. But you may know the white-throat by his snowy throat, striped cap, and the yellow streak he has over his eye, while the tree sparrow is marked by a noticeable dark spot right in the middle of his chest.

Little white-throat's silvery fluting notes may often be heard as early as September about the fields and in patches of rough ground that is overgrown with weeds and briars. He is another gypsy migrant, and after staying a while in one place will take wing and fly off to another, still further south. He spends summer right up in the north of America, from the region of the Great Lakes and northern New England clear to the borders of Alaska. In Canada, where he is a great favorite, he is often called the "Peabody bird," for many people say his jolly little song sounds like "Old Sam Peabody, Peabody, Peabody." Others declare he sings "Swe-et Can-a-da, Can-a-da, Can-a-da," and so call him the "Canada bird"; while one author gives to this pretty little sparrow the name of "sing-away bird"—



Photos by A. A. Allen and U. S. Bureau of Biological Survey

The pine siskin of the evergreen forests thinks it so important for his mate to stay at home that he does all the shopping. Below is one of his neighbors, the white-throated sparrow. In the United States we rarely see these birds except in winter.



"Have you ever heard of the Sing-away Bird,
That sings where the
Runaway River
Runs down with its
rills from the
bald-headed
hills
That stand in the
sunshine and
shiver?
Oh, sing! sing-
away! sing-
away!

How the pines and
the birches are
stirred
By the trill of the Sing-
away Bird!"

Another member of the sparrow tribe who comes from the far north to visit us when cold weather sets in is the redpoll (rēd'pōl'), a pretty little bird with a stripy brown coat, a jaunty red cap, and a rosy flush on the upper half of his snowy breast. The female redpoll, by the way, has no pinkish feathers on her breast, though like

her mate, she wears a becoming red cap.

Redpolls are not regular winter visitors. Sometimes they do not appear at all. But should very severe weather set in, troops of little redpolls often come flocking into the northern states—driven southward by the biting cold and lack of food. At this time of the year these little birds are very wild. They keep up an excited twittering and chattering as they climb about the birches

BIRDS THAT BRAVE THE COLD AND SNOW

and alders, eagerly pecking at the catkins, and if anything startles them off they all dash in a violent hurry.

The pine siskin, too, is a visitor we can never depend upon. Some years this dainty little finch, who reminds us of a goldfinch in its looks and its ways, is not to be seen anywhere about. At other times, in wintry weather, large numbers of these tiny brown and yellow birds may be seen popping about in the pine woods, busily feeding on buds and seeds.

But we can always count on the juncos, at least in the Eastern United States. These "snowbirds," as they are often prettily called, do not wait for the snow to come before they pay us their annual visit. In golden October they are already hopping about 'he hedgerows, thickets, and shrubberies, or the borders of woods. Often they are in company with tree sparrows and white-throated sparrows. There they are all as busy as can be, scratching among the fallen leaves, hunting over tangled weeds and briars for seeds and berries, calling softly, "Sweet, sweet, sweet! Tweet, tweet, tweet," as if they were thoroughly enjoying the last of the bright autumn days. Then, later on, when the ground is covered with snow, you may see them flitting about the fields and rough, overgrown ground, pecking at the tall weeds which hold their seed heads up above the snow.

You may know the juncos by their slate-gray coats, white waistcoats, pale flesh-colored beaks, and long white feathers on each side of the tail; these show plainly when the birds fly up. They are the most cheery, most friendly of little visitors, not nearly so shy as many other sparrows; and when food grows scarce they have no hesitation in com-

ing to our doors and accepting our hospitality.

Juncos will eat bread crumbs eagerly when they are hungry, but they much prefer seeds of one kind or another. And if you thoughtfully scatter mixed seeds—sunflower, millet, or poppy seeds, together with some cracked wheat and oats, such as is ground for baby chicks—in a dry, sheltered spot in the garden, you will rejoice their hearts.

When the snow buntings visit us, you may guess that up in the extreme north the weather is very bad indeed. For in mild winters these little arctic birds seldom come much further south than Southern Canada for their Christmas holidays. Their summer home is right up within the Arctic Circle, in the barren, treeless regions that the Canadian Indians call the "land of little sticks." There these hardy little northerners stay until they are

driven south by intense cold and arctic storms.

In their winter dress the snow buntings are a soft, ruddy brown color on the back, mixed with a good deal of white; but underneath they are almost pure white. Snow buntings are often called "snowflakes," and if, on a dull wintry day, you look up and see a cloud of these pretty birds fluttering down from the cold gray sky, you will understand why this name has been given them. For the birds really do look like large snowflakes falling lightly to earth. Yet when they have alighted on the snow-covered ground and are drifting here and there scratching for food, they might almost be a lot of brown leaves blown about by the wind.

"Snowflakes" are restless little birds. They never, or hardly ever, perch in the trees. They spend most of their time hunting over the ground for seeds, which they appear to



Photo by U. S. Bureau of Biological Survey

These hardy finches visit us only in the dead of winter. Above is a snow bunting, or "snowflake"—to use a common name. Below is a Lapland longspur, so named because of his greatly elongated hind toenail.

BIRDS THAT BRAVE THE COLD AND SNOW

be able to find even when the weeds are covered with a thick blanket of snow. If they are startled, up they all rise together, as if they had been tossed up into the air. Away they all go to a fresh patch of ground and come fluttering down again. They often sing as they fly. You may hear their quiet, trickling notes overhead in the coldest, most blustery weather.

Although they are nervous birds, snow buntings are very confiding and trustful little visitors. In hard times, when the snow is covered with a thick, frozen crust—through which even the snow buntings cannot get, to find the seeds they love—they will come fluttering round our houses, haystacks, and barnyards to see if they can pick up a few grains of food. At night they often put themselves to bed in haystacks or brushwood piles, or cluster together on the ledges under the eaves of an old barn.

Sometimes when the days are very cold we may have a surprise visit from another hardy little arctic dweller. When

The strange beaks of these American crossbills greatly aid the birds in picking seeds from the pine cones. For it is upon these seeds that they feed. Crossbills are usually found in the United States only in winter.

Photo by American Museum of Natural History



This slate-colored junco and white-breasted nuthatch are having a slight difference of opinion. But with such gentle little birds the disagreement can hardly come to much.

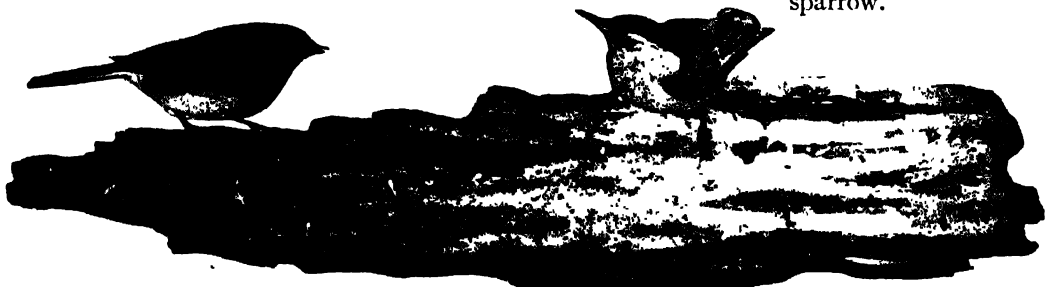


Photo by A. A. Allen

among the bird tracks on the freshly fallen snow we see the marks of a bird's foot with a remarkably long hind claw, we know that the Lapland longspur has arrived and left his footprint as a visiting card. Like his cousin the "snowflake," he makes his home right up in the polar regions, and is only an occasional visitor to the

northeastern and middle states. So when you

see the mark of his long hind claw in the snow, keep a sharp lookout for him, since it may be a year or two

before he will come your way again. You can hardly mistake him when you see him in the spring

or summer, for he is a strikingly handsome bird, about as big as a song sparrow. His jet-black head is marked with a buff stripe over the eye and another one

on the crown; his throat and the upper part of his breast are black, and the rest of his plumage is a mixture of gray, white, and chestnut. In his winter plumage his conspicuous marks are absent and he looks somewhat like a male house sparrow.

BIRDS THAT BRAVE THE COLD AND SNOW

In winter we are not likely to hear the longspur's song, but in the springtime, when he is back in his arctic home, this bird is a famous singer. Like the English skylark and the bobolink, he mounts up into the air to sing, and pours out his heart in a flood of joyous melody as he slowly floats down to earth again.

In the western states the Alaska longspur takes the place of his "Lapland" cousin. The two birds are very much alike, but the Alaska species is not quite so brightly colored.

Another rare and most interesting winter bird is the crossbill, though he, too, is not to be depended upon. For years we may never see a crossbill; then one cold winter's day a whole flock will suddenly appear on the scene—that is to say, if there are many pine or fir trees in the neighborhood.

The red crossbill, a dull red bird with a good deal of gray in his wings, is the more usual visitor to the northern and central states. The white-winged crossbill, who is also reddish but has white bars on his wings, is even more uncertain in his coming and going. Both birds are of much the same size—about six inches long—and both have the same curiously formed beak. The tips of the upper and lower half, instead of joining, are crossed, pointing to right and left as if they had been violently wrenched away.

With such a peculiar beak one might imagine that a crossbill would have great difficulty in eating. But no! It does not worry the bird in the least. It is actually a most useful tool, which he uses to prize open fir cones and hook out the seed which lies at the base of each scale. He can also cut apples and other kinds of hard fruit in pieces to get at the pips inside, and he can catch and devour an insect, when he wants to, with no trouble at all.

It is most amusing to see a flock of cross-

bills feeding in a spruce or a pine tree. The birds are not a bit shy and do not in the least mind our watching them—so long as we keep still. They climb about the tree very much as parrots do, swing upside down from the branches like chickadees, and examine every cone in a businesslike way with their bright little eyes. They seem to prefer the smaller cones growing at the end of the slender stems. And when a crossbill finds one he fancies, he snaps the cone off, hops to the thicker part of the bough, and there, holding it upside down between his feet he proceeds to pick out the seeds with his twisted bill.

In every party of crossbills you will notice that there are some clad in dull, greenish-brown and yellow feathers instead of red and gray. These are lady crossbills, who following the prevailing fashion in birdland are not so conspicuously dressed as their mates.

Quite early in the year the red crossbill begins to practice his spring song. You may hear him trilling and whistling away on many a cold, blustery day toward the end of February; and he and his mate will often go back home and start nest building before the snow has melted from the ground.

Many red crossbills spend the summer in New England; others make their home in the pine forests of Southern Canada. But their white-winged cousins fly all the way to Alaska or Northern Canada to build their nests.

Although crossbills remind us more of parakeets than of any other kind of bird, they are really related to the sparrows and finches. So, too, are the longspurs, although these little arctic birds sing while in the air, as larks do, and have a long hind claw resembling the spur of the true lark family—which merely proves that it doesn't do always to judge by appearances.

This pretty red crossbill visits the United States in winter, when he may be seen flitting through the forests of pine and fir trees.



There is an old legend that this little bird was given his cross-shaped bill and red feathers because he showed pity to Christ upon the cross.

Photo by U.S. Bureau of Biological Survey

The STORY of BIRDS

Reading Unit No. 15

BIRDS OF THE SUNNY SOUTH

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

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The musical mocking bird, 4-133-

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Sociable house finches, 4-135-36
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Flycatchers, 4-136-38

Things to Think About

How may a mocking bird confuse a student of bird songs?
How were song birds once treated in the South?
Why are California towhees very

popular?
How can a mother bird keep her eggs cool by sitting on them?
Why is poultry safe when scissor-tails nest nearby?

Picture Hunt

How do baby birds behave when a parent approaches? 4-132
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What are the colors of a cardinal? Color plate opp. p. 4-40
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What are some of our northern flycatchers? 4-42-45

Summary Statement

Birds of the South include the red cardinal, the musical mocking bird, finches, towhees, and fly-

catchers. The mocking bird is famous for its fine imitations of many song birds.

BIRDS OF THE SUNNY SOUTH



Photo by Lewis Wayne Walker

Our little house finch—often called a linnet—has no dainty titbit for his insistent baby. But young birds

are greedy little things, and open their mouths whether they are hungry or not.

BIRDS of the SUNNY SOUTH

On These Pages You May Make the Acquaintance of Certain Charming Birds Whose Homes Are in the Southern States and Who Never Venture North

IF, FOLLOWING the fashion in bird-land, we go south for our Christmas holidays, we shall meet again many feathered friends who have spent the summer with us in the northern states. There, too, among the resident birds, we should find many who are strangers to us—or at least only distant acquaintances. And if we prolong our southern visit till the birds from the north have flown back to their summer nesting grounds, we shall find that still other birds are flocking in from Central

and South America. They come to spend the hottest months of the year with their friends and relatives in the southern states.

One of the best-known birds over almost all the southern half of the United States is the famous red cardinal, whose fame has spread over the world. He has even had a book called "The Kentucky Cardinal" written about him by the celebrated author James Lane Allen.

Cardinals are occasionally heard and seen in the parks of New York City, while now

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and then a wanderer ventures as far north as Nova Scotia and southern Ontario. But these birds are only stragglers. The true home of the cardinal is in the sunny lands of the south, where almost everyone knows and loves the beautiful red bird and his wild ringing song.

"What cheer! What cheer! Chee-e-e-e!" he sings, not only when the days are fine and warm, but on cold wintry days as well. He seems to know that wintry weather will not last long in his southern home, and is often heard singing merrily in a snowstorm in February or early March.

The cardinal is sometimes called the "redbird," "winter redbird," or the "scarlet cardinal." But he is not really scarlet—his feathers are rather a bright red-rose color. On his head he wears a high feathery crest; across his throat is a band of jet black, and a black ring encircles his stout beak.

The lady cardinal is not so brilliantly clad, though she is a handsome bird in her way. She wears a brown and yellow costume, just tinged here and there with red. She, too, is a very fine singer; and although her song is lower and not quite so thrilling as her mate's, some say it is even sweeter.

The Household of the Cardinals

Our little cardinals make a most devoted couple. They do not part company as soon as their young ones are grown up—as many birds do—but keep together all through the winter until nesting time comes again. They are stay-at-home birds, living all the year round in the same part of the country; though in the winter several couples often join company and roam about together in

sheltered ravines, where they feed on berries in the thickets of briar and wild roses. But if the weather becomes too cold and unfriendly, and berries grow scarce, then the cardinals will come flocking into the villages, where they hunt for scattered grain

about the farms and stacks and even visit the bird tables which kind-hearted folk keep supplied with dainties for such chance winter guests.

When spring returns the little flocks of cardinals separate, and each little pair goes house hunting among the bushes, vines, and tangled briars to find a good spot for their nursery. The lady cardinal actually builds the nest, which is rather loosely made of strips of bark, twigs, rootlets, and dead leaves, and is lined with fine dry grasses. Her husband, although he seldom takes an active share in the work, keeps anxious watch over his home and boldly attempts to drive away anyone who comes too near.

Not only are cardinals lovely birds with charming voices and most engaging ways, but they are most useful, too. For in addition to their regular diet of wild fruits, berries, and seeds they eat a great many troublesome insects. They are especially fond of rose-bugs. Everyone in the south who owns a garden welcomes these beautiful birds.

The cardinal is one of the grosbeak—or "great beak"—finches, who are all distinguished by their big, strong beaks. The rose-breasted grosbeak of the northern states is a beautiful bird, too, with a sweet, musical voice, but he is not such a celebrated character as his cousin the cardinal.

Another world-famous singer of the south is the mocking bird. He is not so brilliantly

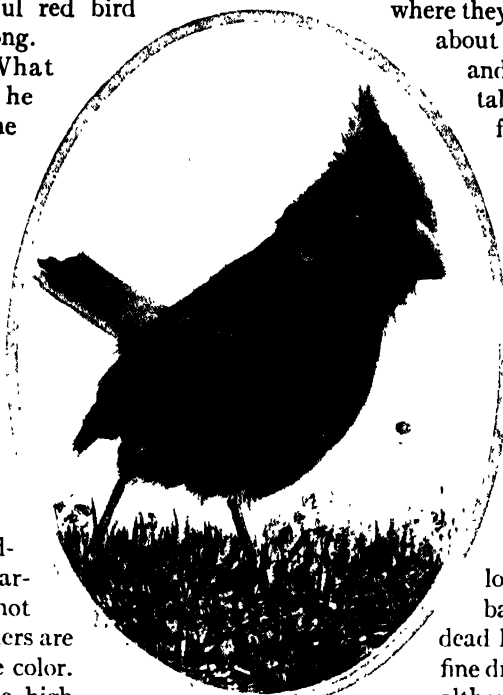


Photo by Lewis Wayne Walker

The cheery notes of the cardinal do not cease with the coming of ice and snow. No matter how cold the morning, he sends out his "twit-twit-twit-twer" to liven the hearts of all his admirers.

BIRDS OF THE SUNNY SOUTH

colored as the cardinal, but his voice is even more wonderful. Indeed, if all the birds of America were to take part in a singing contest, the mocking bird, without a doubt, would carry off the prize.

Because of his glorious voice the mocking bird has been called the "American nightingale." He is a member of the thrasher family, and so is closely related to the thrushes and bluebirds, who are all noted for their song—though none is so talented as he. He is about the size of a robin, but is a slimmer bird, with a longer tail; and in his soft grayish plumage, touched

here and there with white, he is really an elegant bird.

Mocking birds are well known over almost all the southern half of the United States. Gradually they are working their way north, and in summer are seen in the northern states and even in Southern Canada. But their true home is in the warm, sunny south, where the plantations and orange groves ring with their song by night and by day.

When singing, the mocking bird's favorite perch is the top-most bough of a tree. There, with drooping wings and beak pointing skyward, he pours forth a perfect flood of melody.

Now high, now low he sings. Now his notes rise loud and thrilling, now sink to a soft, sweet trill. Sometimes as he sings he springs a few feet into the air, as if he

could hardly contain himself for joy. There he hovers for a moment, then, still singing, he drops again to his perch.

It is, of course, in the springtime when he is courting his mate that the mocking bird's song is at its very best, but he sings delightfully the summer through, especially on moonlight nights. Even in winter his voice is heard on many a soft mild day, while in the half-tropical climate of the gulf states he sings almost the whole of the year round.

Besides his marvelous song the mocking bird has another accomplishment. He is a most

clever mimic. He will sometimes imitate the song of the cardinal, bluebird, wood thrush, robin, or wren so exactly that you would never guess, unless you saw him, that it was really the mocking bird singing.

Yet although he is so distinguished, the mocking bird is by no means proud. He will come into the garden and hop about in a most friendly way. He will perch

on the veranda, sing to you from the top of the chimney, and when he finds you may be trusted he will fly in at the open window and hop

round the room. In the spring, if you have gained his confidence, he will very likely bring his mate into the garden, and the happy pair will build their nest in a small



Photo by U. S. Biological Survey

As its name implies, the mocking bird is highly skilled in imitating other birds. According to Dr. Chapman, one of these gifted birds imitated the notes of over thirty different species of birds in ten minutes!



Photo by A. A. Allen

While the mother mocking bird is sitting on her bluish eggs, her mate is singing to her. In the southland the feathered creatures do not seem to hurry so much as northern birds. Their time is spent in the enjoyment of life.

BIRDS OF THE SUNNY SOUTH

tree or in a vine growing over the doorway or veranda.

Mocking birds' nests may be found in all sorts of places, in a brushwood pile, on the top of a stump, or fixed in the corner of a rail fence. Twigs, dry grasses, and strips of vine bark are the principal materials used in its construction, but various odds and ends, such as rags and bits of paper and string, are often worked into it, and it is carefully lined with tender rootlets.

As is so often the way in birdland, it is the lady mocking bird who does the hard work of building the nest. Her mate is then so busy singing that he has no time for anything else. But when the good little mother is hatching her eggs or brooding her young ones, the male mocking bird is never far away. And should a cat, a crow, or a girl or boy come too near their home, both the parents dash about scolding and making such a noise that all the other birds round about are alarmed and join in the racket.

Before they have tasted the joys of a free, wild life in their own native groves and plantations, young mocking birds are easily tamed; they will live and even sing in captivity. But to deprive one of these delightful singers of its liberty and imprison it for life is a cruel thing. No one who really loves birds can bear to see them shut up in cages. At one time thousands of mocking birds, and cardinals, too, were caught and sold to thoughtless people. Many of these poor little captives were sent away over the sea to foreign lands, but very few lived for more than a month or two. Now, one is glad to say, this is no longer allowed, for in most of the states special laws have been passed to protect our beautiful native birds from such

a cruel fate. Surely they deserve protection.

If we should chance to stay in California, one of the first birds we shall be likely to make the acquaintance of is the house finch—or linnet, as he is often called. For this home-loving little bird is to be seen about almost everywhere—in gardens, orchards, parks, ranches, and even in the busy streets of the cities and villages. But it is no good looking for him in wild

forest or desert land, for the house finch is the most sociable of small birds. He likes our company, and he likes good living; and he is wise enough to know that where human folk congregate there he is likely to find plenty to eat. And the house finch will eat almost anything. Seeds, fruits, crumbs, scraps are all eagerly gobbled up by this somewhat greedy little bird. He may often be seen hunting about the streets for his dinner right under the wheels of the automobiles.

If you put up a nesting box in the garden a pair of house finches are almost sure to take possession of it; but they will be quite as well pleased with a gourd or any old tomato can. If there are no boxes or tin cans handy the finches will make their nest in the honeysuckle or rose vine over the veranda, or in the trees in the garden or orchard.

The Cheerful House Finch

House finches are delightful little neighbors to have about the place. They are so brisk, cheery, and talkative! They have so much to say to one another that they chirp and twitter from morning till night, while the male bird has a very sweet, bubbling song, much like the song of a canary.

People who do not know these friendly



Photo by A. A. Allen

The Florida cardinal is what specialists term a subspecies of the true cardinal. Subspecies are usually caused by differences in humidity, altitude, temperature, and food. Many times a group of birds of a given species becomes separated from the rest by natural barriers, and changes in plumage result. In this way a subspecies is formed.

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little birds well often confuse them with the English sparrows, and they are blamed for much of the damage done to field and garden crops by those mischievous little foreigners. The female is certainly rather sparrowlike in her stripy brown dress, but her mate, with his strawberry-red head, throat, and back, can hardly be mistaken for any other bird.

How Sparrows Spoil Our Vegetables

House finches may help themselves to the fruit in the garden sometimes, but they feed chiefly on the seeds of weeds; so the pretty little birds are really useful. It is the English sparrows and Gambel's sparrows—the latter to be known by their black and white striped caps—who are the real culprits and who make themselves such a nuisance in southern California by pecking and spoiling vegetables of all kinds.

Although we think of the house finch as a California bird, he is to be found throughout the southwestern states from eastern Oregon and Idaho to middle Texas.

Another little southerner who seems especially to belong to California is the brown towhee (tou'hē), or "Anthony's towhee," as he is often called. At first you might not notice him, especially since he has no bright colors or thrilling song to attract your attention. He is just an ordinary-looking little brown bird with a ruddy tinge on his throat, and although he chirrups away cheerily his voice is nothing to boast about.

But when you come to know him better you cannot help liking "Anthony." He potters about the garden, industriously picking up the weed seeds under the bushes, and when you stop to watch him he will give you a quick glance with his

bright, beady eyes, then calmly go on scratching around as much as to say, "Oh, it is only a friend." He will hop almost up to your feet if you are sitting still in the garden, perch on the veranda rail to preen his feathers, introduce his little brown mate to you, and perhaps the quiet little pair will build their nest in a tree quite close to your house.

Everyone gives Anthony Towhee a good character. He works hard to keep down the weeds by eating up the seeds wholesale. It is really astonishing how many he can get through in a day. He likes insects, too, and gobbles up a good many caterpillars, grasshoppers, ants, and troublesome scale insects, which do so much harm to the plants.

Where the Towhees Live

Strictly speaking, Anthony's towhee is found only in southern California and in the most northern part of Lower California. But two other brown towhees—so like Anthony as really to make no difference—range from western Texas to Arizona and from Colorado to Mexico. In Mexico the natives, who often grow quite fond of the sedate little brown bird who hops so quietly round about their homesteads, call the towhee the "little old woman."

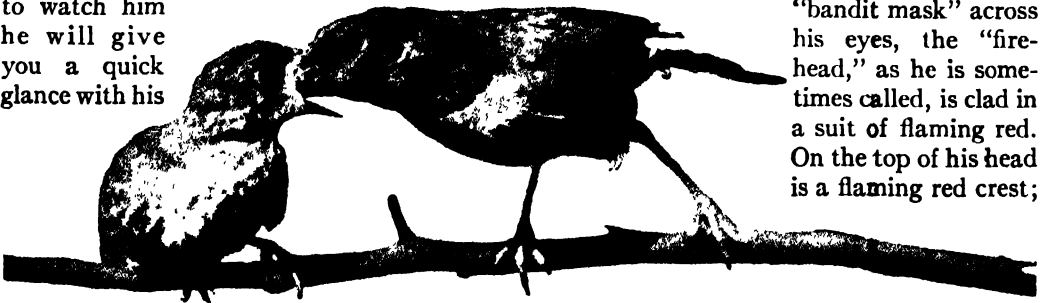
A very different bird in every way is the vermilion flycatcher, one of the brightest and gayest of the small southern feathered folk. He is doubly distinguished by being the most gorgeously clad of all American

flycatchers and one of the very few to be found in the United States all the year round.

Except for his wings and his long tail feathers, which are grayish brown, and a dark "bandit mask" across his eyes, the "fire-head," as he is sometimes called, is clad in a suit of flaming red. On the top of his head is a flaming red crest;

These brown towhees grew in the western states. We have already been introduced to their cousin, the red-eyed variety of Eastern North America. Towhees—or chewinks, as they are often called—are true finches.

Photo by Lewis Wayne Walker



BIRDS OF THE SUNNY SOUTH



Photo by Nature Magazine

This female scissor-tailed flycatcher raises her young on the western plains. Occasionally individuals with a desire to see the world visit the eastern states,

and when he swings on a spray, as he is fond of doing, puffs out his chest, and fluffs up his feathers, the sprightly little flycatcher looks like a gayly painted ball. He is a most restless, high-spirited little fellow.

When a Flycatcher Goes Courting

He is at his liveliest in the early spring-time, when he is courting his mate. To win the heart of his ladylove the funny little bird bobs and bows and flutters about, showing off all his fine feathers. He snaps his beak and sings to her in a shrill, piping voice, "Ze-bree, zebree! Tutty, tutty, tutty!" which is the best he can do in the musical way. Then he soars twenty or thirty feet up into the air. He hovers for a while like a sparrow hawk, on quivering wings. Then suddenly he wobbles from side to side as if he were about to fall, and comes floating slowly down to earth again.

But the lady flycatcher does not seem at all impressed by the antics of the gay little fire-head. In her dress of sober brown and

but this is rare. These graceful flyers are closely related to the phoebe, pewee, and kingbird, all of which are old friends of ours.

her light streaked waistcoat, just flushed with red below the waistline, she sits primly on a twig and takes very little notice of her ardent admirer. At length, however, she consents to set up housekeeping with him, and the happy pair start house hunting among the cottonwood, mesquite, sycamore, or willow trees near a silent pool or a murmuring stream.

A Soft Nest for a Flycatcher

The nest is a shallow, cup-shaped cradle made of Indian-tobacco weed, soft fragments of bark, and small twigs, compactly woven together and bound about with cobwebs. It is lined with feathers, wool, fur, plant down, or any other soft material the birds find lying handy. Outside the little nest is strengthened with a few straight twigs and ornamented with tufts of greenish-gray lichen.

When his wife is sitting on her pretty spotted eggs the vermilion flycatcher often brings her a little present of something nice to eat. But the little mother bird does not

BIRDS OF THE SUNNY SOUTH

like her gorgeous partner to come too near the nest; she is perhaps afraid that his flaming colors may attract attention to it. So when she sees the male bird coming, she flies to meet him and takes the titbit from his beak in mid-air. Mostly, however, the mother, who is an independent little person, prefers to catch her own food. So she watches from her nest and darts out on any bug, beetle, or fly that happens to pass on the wing. This conduct does not harm the eggs, as down in the far south, where the vermilion flycatchers live, the air is so hot that there is no need to keep the eggs constantly warm. Indeed, in Mexico, where these pretty birds are found, as well as in the southwestern states, the little mother is careful to stay in her nest in the hottest hours of the day to protect the eggs from being scorched by the terrific heat

Useful Habits of the Flycatchers

Like all the "tyrant flycatchers" the vermilion flycatcher is a useful bird. He will sit patiently on a twig or a fence post for hours, darting out at every bug or fly and snapping it up in mid-air just as his cousins, the kingbirds, phoebes, and crested flycatchers, do. Or he will hover like a tiny hawk over the meadows, pounce down upon a beetle or grasshopper, then fly up with his prize and beat it against his perch before eating it.

Quite as useful and interesting as the little fire-head are the scissor-tailed flycatchers, whose true home lies east of the Rockies in the great open plains from southern Kansas to southern Texas—though occasionally stragglers make their way as far north as Illinois or even Canada, while others wander east to Florida, Virginia, Connecticut, and Vermont.

The scissortail is a handsome bird clothed in soft gray with touches of orange and pink. He has a gray cap with an orange-red crown, a white throat and breast shading to salmon pink, and an extremely long forked tail which he opens and shuts like a pair of scissors when he is excited.

Apart from this wonderful tail, which is seven, or sometimes nine, inches long, the

scissor-tailed flycatcher is about the size of a kingbird, and he is every bit as bold and fearless as his cousin of the northeastern states. He does not interfere with his smaller neighbors, but no bird is suffered to approach his home or hunt over his territory. Ravens, hawks, jays, even vultures are put to rout by this dauntless little "Knight of the Scissors," who dashes wildly at his enemies and with screams of defiance pecks them viciously about the ears and eyes. Indeed, such a champion defender of his home and his rights is this plucky little flycatcher that farmers and ranchmen living on the open prairies are always glad when a pair of scissortails nest near their houses. For the hens and their chicks are quite safe from the attacks of birds of prey when these feathered watchmen of the poultry yard are about.

Scissortails are fond of building their nests in the trees round a ranch house, camp, or cabin in the open country. And in the springtime, before the excitable little birds have chosen their partners and their nesting sites, they often quarrel among themselves in the most shocking way.

It takes each little scissor-tailed pair about a week to build their nest, which is made chiefly of Indian-tobacco weed, small twigs, and weed stems; but scraps of anything and everything—moss, wool, cotton waste, corn husks, paper, rags, twine—are all woven into it, and the babies' cradle when completed is rather a large, rough-looking, untidy affair. From three to six beautiful, creamy-white or pale pinkish eggs, speckled and spotted with lavender and reddish or purplish brown, are laid in the nest, and before two weeks have passed the father and mother scissortail are busy feeding their long-tailed babies.

When summer fades the scissortails gather together in flocks to start their journey to Central America, where they spend the winter months. Hundreds—sometimes thousands—of the pretty, graceful birds roost together at night in the trees, and collect in excited, twittering rows all along telegraph and telephone wires to rest on their journey south; and at the end of October there is not a single scissortail left in the United States.

The STORY of BIRDS

Reading Unit No. 16

BEAUTIFUL BIRDS OF THE SOUTHLAND

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

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The road runners, 4-142-43
Western quail, 4-143-44
The smallest pigeon in North
America, 4-145-46
The tragedy of the snowy egrets,

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How the ibis gets its dinner, 4-
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How the spoonbill uses its bill,
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The snakebird, 4-149

Things to Think About

How does a humming bird feed
its baby?
What strange habits do road run-
ners have?
What have ladies' hats to do with

snowy egrets?
What evidence have we that the
ibis is intelligent?
How does the water turkey get
large numbers of fish?

Picture Hunt

What is often eaten by road run-
ners? 4-141-42
What part of the year is spent by
ground doves in raising their
young? 4-144
What is a rookery? 4-145
What steps had to be taken to

save wild birds from hunters?
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What are the colors of western
quail and water turkeys?
Color plate opp. p. 4-152

Related Material

How did John James Audubon
spend his life? 13-427-28
What mammal of the United

States was almost wiped out by
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Leisure-time Activities

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making establishment. If possi-
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dustry, 4-146
PROJECT NO. 2: Try dyeing
chicken feathers to make trim-
mings for hats.

Summary Statement

Beautiful birds have been ruth-
lessly slaughtered for their feath-
ers. Only well enforced laws have

succeeded in keeping hunters
from wiping out our most beauti-
ful birds.

BEAUTIFUL BIRDS OF THE SOUTHLAND



Photo by American Museum of Natural History

American egrets were common in our southern swamps until ladies decided that their plumes would look well on hats! Then plume hunters shot the birds at breeding time—for only when the birds are nesting do aigrettes appear. So the poor creatures were killed, a few feathers were torn out, and the bodies were left to rot while the young starved in the nest. Only a few ounces of feathers could be taken from each bird, but a successful hunter could kill a thousand birds a

day, and the plumes were more valuable than gold. Do you wonder that for a while it looked as though the egret would die out altogether in a very few years? Luckily the federal government passed protective laws and the egret would now seem to have a chance to survive. Some of our most charming wild fur-bearing animals are being as cruelly threatened as were the egrets, and unless more laws are passed, the thoughtless slaughter will go on.

BEAUTIFUL BIRDS OF THE SOUTHLAND

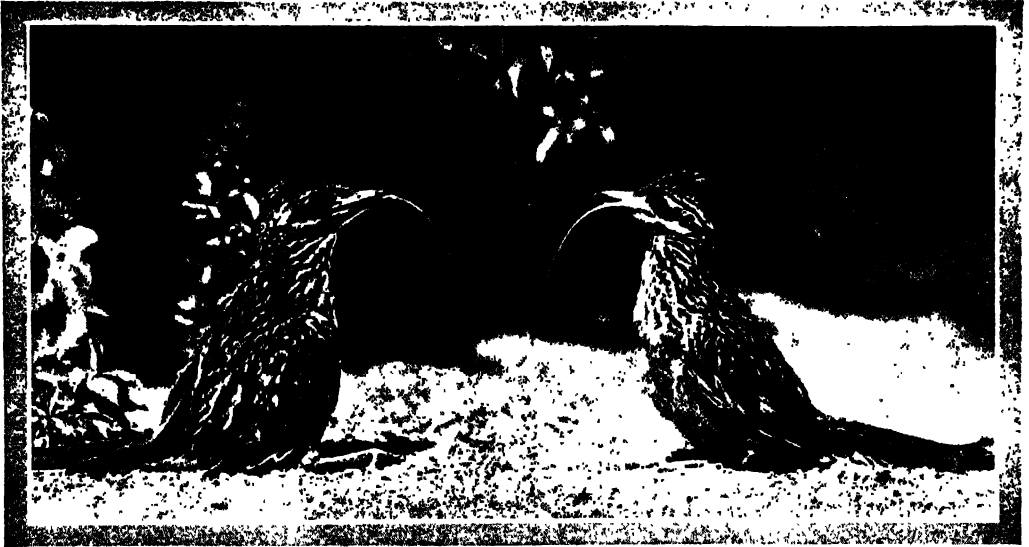


Photo by Nature Magazine

One surely would never guess that these strange creatures were cuckoos. The road runner of the dry Southwest is noted for its strange habits. The pair above are

holding a lizard-eating contest. Only the tails of the lizards are left, and if one can judge from appearances, the race is going to be a close one.

BEAUTIFUL BIRDS *of the* SOUTHLAND

Unless You Go to Florida or the Great Southwest, You Will Never See the Snowy Egret or Anna's Humming Bird

PEOPLE who live in the North would be loath to trade the robin's cheery note or the thrush's call for all the gorgeous birds that warmer climates might be able to muster. But that does not mean that these more brilliant creatures are not very beautiful indeed to see, or that they may not have many endearing ways that make them loved by everyone who knows them.

Among the lovely birds of the Southwest none is more charming than the glittering fragment of a rainbow called Anna's humming bird. Humming birds are to be found only in the New World. At least five hundred species of these living jewels flit about the flowers in the sunshine in Central and South America, and of these only a small number regularly visit the United States to build their nests and bring up their wee babies in the summer time. The tiny ruby-throat journeys all the way up to Eastern North America, but all the other humming

birds make their summer home in the Southwest, and only one, the Anna's humming bird, lives all the year round in the United States.

The male Anna is a most gorgeous scrap of feathered loveliness. His tail is a glittering, metallic green; his crown and gorget a brilliant crimson, flashing in the sunlight and changing, now to rose pink, now almost to black, now to crimson once again, as the restless wee bird twists and turns his head about. The lady Anna has only a tinge of crimson on her throat, though her back is a shining green. She has a short rounded tail, the tail feathers being tipped with white, while her mate has a forked tail and has no white on the feathers.

They are friendly little folk, these humming birds. In their home in California or southern Arizona they love to flit about the gardens, sipping the nectar from the flowers with their long, needlelike bills, their rapidly vibrating wings making a humming sound

BEAUTIFUL BIRDS OF THE SOUTHLAND

the while. The male Anna will balance himself on a slender twig and sing his little song, "Te-sit, te-sit, zip, zip, tee-tee-tee-tee!" over and over again. To be sure his voice is somewhat wheezy, but he seems very happy and pleased with himself as he sings his funny little tune. The female will build her cup-shaped nest in the fruit trees and bushes round the house, or in the vine over the porch. She does all the work herself. Her lazy little husband leaves everything to her, and does not come near the nest while she is sitting or raising her pair of young ones.

But the mother bird is quite capable of bringing up her twins alone. She collects honey and tiny insects, swallowing and partially digesting the food, which she afterwards pumps up again into her babies' mouths, plunging her needlelike bill right down their tiny throats. The wee birds enjoy this strange kind of feeding bottle, and they hold on tight to their mother's bill and suck down as much food as they possibly can.

The Stout-hearted Humming Bird

Although they are so small that many of them may be caught by a cobweb, humming birds are stout-hearted, courageous little folk. They will angrily chase quite big birds away from their feeding ground, and male hummers often fight furiously together. Two tiny rivals who are courting the same little mate will engage in a genuine pitched battle in mid-air. They tilt at each other with their tiny, delicate rapiers, grapple one another with their claws, and the two little bundles of feathery fury will come tumbling to the ground and roll over and over in the dust until one of the combatants has had enough and darts away leaving his rival master of the field.

In the bare, rocky regions and great dry plains of the Southwestern United States,

where the prickly cactus flourishes, many birds of many kinds make their homes. There you may hear the little cactus wren trilling away as it sits on the top of a prickly bush. There, too, you may see a peculiar "road runner" dash across a sandy track in hot pursuit of a lizard.

The road runner, or chaparral (chăp'ă-răl') cock, is a big fellow some eighteen or twenty inches long, but half this length is made up of his remarkably long stiff tail feathers. His plumage is a brownish color shaded with purple and green, and each feather is laced with a creamy-white border. On

his head is a stiff, bristly crest, and behind each eye are two large bare spots, one blue, one orange. Altogether the road runner is one of the queerest-looking birds you are likely to meet with in a day's walk. He belongs to the cuckoo family,

as you can tell by his feet, which have two toes turned forward and two turned backward, instead of three in front and one behind, like a perching bird.

The road runner looks funniest of all when he is sprinting for all he is worth along the roads through the barren country where he is most often to be found. With his neck stretched out, his wings outspread, crest raised, and his long, stiff tail jerking up and down, this odd bird skims over the ground at such a rate that even a man on horseback can hardly keep up with him—though of course he would have small chance of winning a race with an automobile!

But when a traveler walks or rides through the wild desolate plains of the Southwest, one of the "runners" will often dart out of the cactus bushes by the wayside and set off down the road as fast as his stout legs will carry him. Sometimes the queer bird will race along like this for a quarter of a mile or more, always keeping just ahead of the man following behind. Then suddenly he



Photo by Nature Magazine

The road runner is about twenty-five inches long, and very swift upon his feet. He has to command a good deal of speed, for his diet consists of lizards, which are anything but sluggish animals. The road runner above has just caught a dainty titbit, which will shortly disappear bodily down his throat.

BEAUTIFUL BIRDS OF THE SOUTHLAND

tires of the race, and flies up into a tree or makes a wild dive into the bushes again.

The road runner can use his wings. He will sometimes take short flights over the ground or from one tree to another. But he much prefers to trust to his stout legs when he is in a hurry or is trying to escape from anybody.

A Nest in Prickly Cactus!

Road runners make their nests in a low bush or tree. As often as not they will fix it in the middle of a prickly cactus—which must be very uncomfortable for the baby birds should they chance to fall out of the nest before their feathers have grown! The nest is made up of all sorts of odds and ends—twigs, leaves, roots, seed pods from the plants and bushes all around. Even cast-off snake skins are frequently added to the heaped-up pile of stuff to help make a comfortable bed for the baby road runners.

Both the father and mother road runner take part in erecting this large and substantial nest for their young ones and the male road runner is said to take turns with his wife in sitting on the eggs. Certainly he helps to cater for the children as soon as they are hatched; for both parent birds have been seen carrying food to the nest—which, strange to say, may contain, all at one time, one or two sturdy youngsters nearly ready to leave the nest, a couple of black-necked babies only just hatched, and an unhatched egg or two. The children are fed on much the same fare as their parents enjoy. Beetles, grasshoppers, caterpillars, centipedes are all stuffed down the youngsters' throats, besides large quantities of lizards, of which there is always an abundant supply in desert regions. Sometimes a lizard is rather too much of a mouthful for one of the babies, and the queer

little thing will sit for a long time with the lizard's tail hanging out of his bill. Then, at last, after many valiant attempts, he succeeds in swallowing his dinner with a final gulp!

Not only lizards, but mice and, sad to say, young birds, too, are devoured by these curious road runners. They are even said to kill and eat snakes, and they probably do, when the snakes are quite small ones. But the wonderful tales told of road runners fighting and killing rattlesnakes must be put down as travelers' yarns.

A Bird of Plain and Desert

Another bird that often runs long distances, instead of flying, is the California quail of the open plains and valleys and wild desert regions of the Southwest; it takes the place of little bobwhite of the eastern parts of North America. In his quiet, but elegant suit of warm brown and gray tinged with russet, his black bib edged with white, his yellow forehead and the two nodding black plumes on the top of his head, the quail—unless he is moulting—looks always sleek and well-dressed. His wife in her modest brown and gray plumage is a plump and pleasing little bird, and she too wears a pair of graceful head plumes.

In early summer one may often see a little flock of quails

The valley quail is found on the Pacific coast. While not at all tame it sometimes comes into small towns and may be seen feeding on the lawns. Because it is so often hunted this noble bird has decreased in numbers alarmingly.

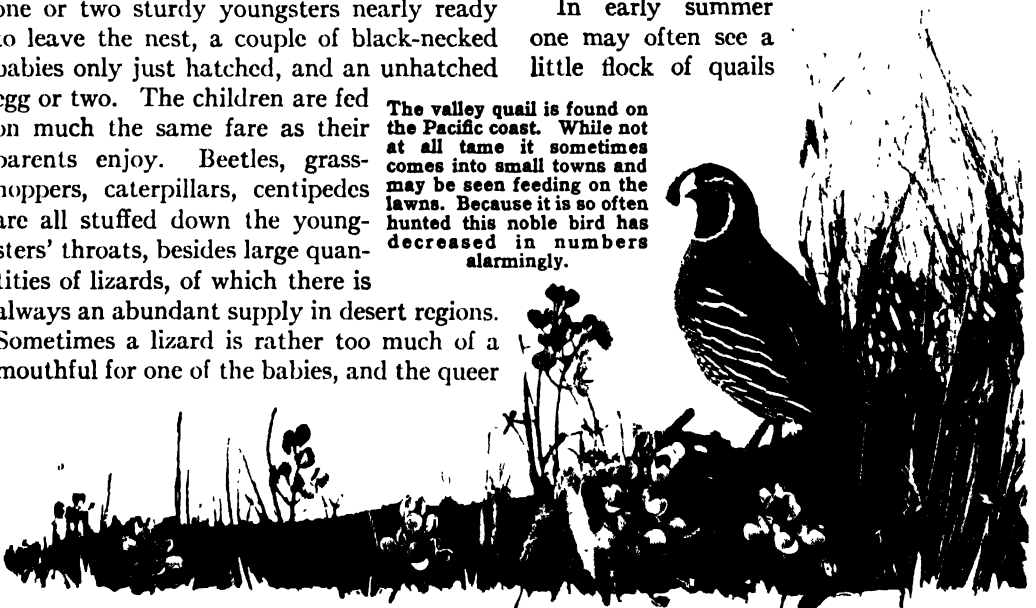


Photo by American Museum of Natural History

BEAUTIFUL BIRDS OF THE SOUTHLAND

out for their morning promenade. The father and mother lead the way, stepping sedately with plumes bobbing; they progress along a quiet country road, followed by a brood of from fifteen to twenty little chicks. It is pretty to see the little birds running about, picking up seeds and scratching and kicking in the dust. The old birds, too, stop here and there to feed or take a dust bath, which quails thoroughly enjoy. But they never forget the children, and if in their excitement the youngsters wander too far and become scattered, a warning "ku-ku-ku!" from one of the parent birds calls them together again.

The young quails quickly learn to take cover, and at the first signs of danger they fly up in the trees or hide among the bushes if they happen to be in a wooded part of the country. But if the ground is bare the birds will crouch down by a small stone or clod of earth or will sink down into a little hollow in the ground, and at once they disappear from view. It is wonderful how these birds contrive to hide themselves in nothing at all!

Toward the end of the season, when all the young quails are well grown, the birds gather in flocks and go about together until the winter is over and nesting time comes round again. Then the flocks separate and the birds go off together in pairs in the usual way. They make no real nest. Just a slight hollow in the ground under the shelter of shrub, stone, or tuft of rough grass is good enough for them. In this

they may put a few feathers or a small bundle of dried grass, and that is all the baby quails ever have by way of a nursery.

When the female quail is sitting on her large batch of creamy eggs spotted with golden brown, her mate keeps guard from the top of a rock, stump, or bush near by. Every now and again he calls to cheer

the patient little mother or warn her of danger.

Some say he calls, "You-go-way!" or "Put that down!" But to most people his remarks sound more like "ka-ka-koo," while his danger signal is a quick, startled cry, somewhat like "hist! hist! hist!"

Quails do not eat many insects, but they help to keep weeds down by eating the seeds. They will pick up fallen grain, but seldom damage growing crops. They are sometimes accused of spoiling the grapes in the vineyards,

and unfortunately they do peck the ripening fruit when they have the chance. But the quails are often blamed unjustly for the damage done by other birds and swarms of wasps. They go into the vineyards more for

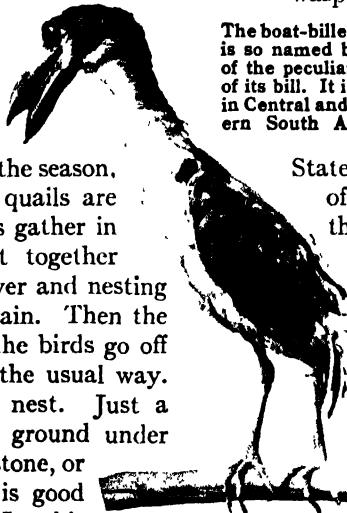
the sake of the protection the vines afford them from the keen-eyed hawks, who are exceedingly fond of plump little quails!

In the Southeastern United States, but more particularly in Florida, one of the most familiar and friendly birds is the gentle little ground dove. Almost anywhere, in fields, gardens, or quiet streets, you will meet this dainty little feathered person with his tail lifted and head bobbing as he struts about in a leisurely, dignified way. Now he stops to pick up a seed, now to peck at a berry that has fallen to the ground. He is such a favorite in the South that no one would



Photo by A. A. Allen

The eastern ground doves, like the house wrens and purple martins, seem to enjoy the presence of man. In the southern states they are often found in small towns, raising their little families from March to September—an unusually long period.



The boat-billed heron is so named because of the peculiar shape of its bill. It is found in Central and Northern South America.

Photo by N. Y. Zoological Society

BEAUTIFUL BIRDS OF THE SOUTHLAND



Photo by American Museum of Natural History

In the days of the red man, who never was the ruthless butcher his fair-skinned brother is, colonies of beautiful herons were found all over the southern states.

This Florida rookery, full of herons, egrets, ibises, pelicans, and spoonbills, reminds one of those early days that are now so unlikely to return.

dream of harming him in any way, and the little bird has such confidence in our friendship that he will peck about almost under our feet.

The Brave and Gentle Ground Dove

The ground dove is the smallest of all the pigeons of North America. It is not quite seven inches long from the tip of its beak to the tip of its tail; it is just a little bit bigger than an English sparrow. Its legs are exceedingly short, its bill soft and delicate; while its plumage of soft olive-brown, with purplish spots upon the wings and a tinge of blue and green here and there, is very pretty and becoming.

Small and gentle as it is, this little dove is no coward. Should a bigger bird, such as a brown thrasher or a mocking bird, pop down beside it while it is pecking about on

the ground and try to steal its food, the plucky little dove will ruffle up its feathers and strike at the thief with its wings.

All through spring and summer the soft, rather mournful cooing of the ground doves is heard from the leafy shelter of the oak and orange trees by the wayside, or from the top of house roofs and barns. Usually the birds sit and coo together in pairs; when three or four birds are seen in company they are probably a small family party—father, mother, and one or two children.

When not sitting and cooing the little doves spend most of their time on the ground searching for seeds and berries and occasionally picking up an insect as a change in their regular diet. They are fond, too, of taking a dust bath, and are often to be seen kicking and fluttering in little hollows they have scratched in a sandy road—turning

BEAUTIFUL BIRDS OF THE SOUTHLAND

themselves first on one side, then on the other, to let the warm sand trickle down through their feathers.

When flying, the doves skim low over the ground, rising just high enough to clear the bushes and trees that come in their line of flight. They are wonderfully strong on the wing, and do not seem to mind a bit being buffeted about when a strong breeze is blowing.

Like all the pigeon tribe, the ground doves do not believe in spending too much time and thought in the construction of their nests. A small bundle of grasses, a twig or two, and perhaps a few rootlets loosely put together is all the little mother bird considers necessary for her babies' cradle. The nest may be fixed in the crotch of a tree or in a bush, or sometimes it is placed right on the ground in a field or in the middle of a clump of weeds.

Two snowy-white eggs—never more than two—are laid in the makeshift nest by the female. For pigeons never have a whole nurseryful of youngsters to care for all at once, as so many birds do. One baby or a "pigeon's pair" they think quite enough to bring up at a time—and certainly it seems to keep them busy!

Farther west the Mexican ground dove takes the place of the little Florida dove, but the two birds are so much alike that it would puzzle you to distinguish one from the other.

Strange Birds of the Swamps and Jungles

Many strange and beautiful birds live in the great swamps, marshy jungles, and the wet prairies dotted with shallow lagoons of the most southern states. As human folk encroach more and more upon their territory, draining much of the low country, these feathered tenants of the lowlands are gradually growing fewer, and many that once

ranged over almost the whole of the southern states are to-day to be found only in tropical America and a few islands and reservations in the southern states, where they are safe from molestation.

Four kinds of beautiful white heron still live in southern Florida, the West Indies, and other warm, steamy places in Southern North America. There is the "great white heron," a truly magnificent bird about as big as the great blue heron. He is entirely clad in glistening, silvery-white feathers.

His cousin, the little blue heron, is all white, too, until he is nearly a year old. Then he changes his white feathery coat for a bluish-gray one.

But the two most famous white herons are the egrets (ē'grēt) that live in the hot, swampy jungles both in the Old and New World. In North America they are now to be found only in the South Atlantic and gulf states.

The larger of the two egrets stands three feet high on his long slender legs. On his back he has the most lovely of long fine white plumes. The smaller bird, called the "snowy egret,"

is about two feet tall, and his plumes are just as splendid, though of course not so long.

These plumes are of course not worn all the year round. They grow in the spring-time, when the birds are wearing their best courting suits; and when the nesting season is over they usually drop out. Sad to say, for the sake of these lovely plumes, which are called "ospreys" or "aigrettes," the poor birds have been so cruelly persecuted that in some of their haunts they are now almost extinct.

Hundreds of snowy egrets make their nests close together in the marshes in the spring, in company with other herons. These huge



by N. Y. Zoological Soc

The snowy egret, like his larger brother, was nearly exterminated by the plume hunters. He may be distinguished by his recurved plumes. At the present time the use of wild bird feathers on hats or other clothing is prohibited by law. The shooting of migratory birds is likewise prohibited except in the case of game birds—and even they may be shot only during a season that is fixed by law.

BEAUTIFUL BIRDS OF THE SOUTHLAND

bird nurseries are called "rookeries," and you cannot think what a noise there is when the young ones are hatched and all screaming for food, and the old birds are squawking with excitement as they keep flying up with fish for their young.

The Cruel Fate of the Egret

It is just at this time, when the birds are all so happy and busy in the rookery, that the egret hunters come along. And then—it will hardly bear thinking of—the proud parent birds are shot down and the beautiful plumes torn from their backs.

Sometimes after one of these cruel raids there is hardly a full-grown egret left, and the heartless hunters go off with their plunder leaving the ground strewn with dead and dying birds. But this is not all. With none to care for them, the poor helpless little nestlings must starve. They cry and cry, but no father, no mother egret will ever bring food to them again.

Now it is quite certain that most people who buy aigrettes do not know in what a terrible manner the feathers have been obtained; for surely anyone who has heard the story of the egrets would never wear one of their beautiful plumes again. It is pleasant to be able to say that in the United States people are no longer allowed to shoot the egrets, or even to sell their feathers. And in the nesting season most of the big rookeries are now patrolled by wardens, to protect the birds and save them and their little ones from such a cruel fate.

Two other beautiful and interesting birds of the southern swamps and marshes are the white ibis (ī'bīs) and the roseate (rō'-zē-āt) spoonbill. Except for the black tips to his wings the ibis is clad in snowy white. His feet and his face are

coral red, and his beak, which is very long, is curved downward like a curlew's. And for that reason, perhaps, he is often called the "white curlew."

Ibises are very sociable birds. They feed and fly in large flocks, and gather together in larger colonies to build their nests and rear their young ones. Hundreds of these wonderful birds may be seen feeding among the blue flags and lilies in the shallow pools on the marshes, sometimes by themselves, sometimes in company with herons of different kinds. Suddenly the whole flock will rise, and with their long necks stretched out, away they all go flapping and sailing through the air to try their luck in another fishing ground. They feed on frogs, fishes, and water insects, but best of all they like the crayfish. John James Audubon, who knew so much about birds, described for us the cunning way in which the birds catch the little crayfish when the pools and little streams are dried up: "The crayfish often burrows to the depth of three or four feet in dry weather, for before it can be comfortable it must reach the water. This is generally the case during the prolonged heat of summer, at which time the white ibis is most pushed for food. The bird, to procure

Luckily for the wood ibis, he possessed no beautiful plumes; so man has allowed him to live. He is protected by his extreme ness also. If he were tamer probably should be less likely to spare his life.

the crayfish, walks with remarkable care toward the mounds of mud which the latter throws up while forming its hole, and breaks up the upper part of the fabric, dropping the fragments into the deep cavity made by the animals. Then the ibis retires a single step, and patiently waits the result. The crayfish, incommoded by the load of earth, instantly sets to work anew, and at last reaches the entrance of its burrow; but the moment it comes in sight, the ibis seizes it with its bill."

You may always know which

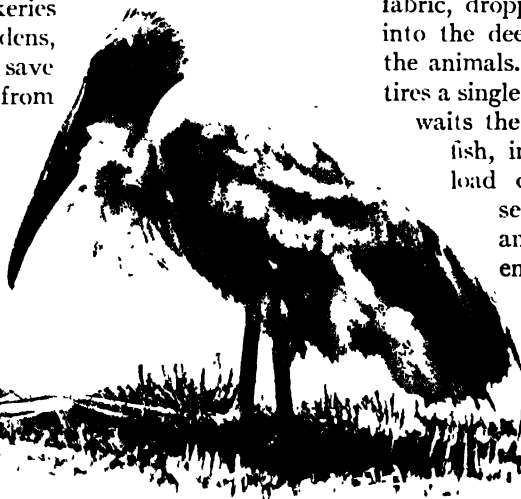


Photo by N. Y. Zoological Society

BEAUTIFUL BIRDS OF THE SOUTHLAND



Photo by American Museum of Natural History

The patient mother above is a white ibis, a bird that lives in the swamps all through the South and as far

west as California. So far it has been lucky enough to survive the cruelty of man.

are the young ibises in a flock, for although they may be quite as big as the older birds, they have dark gray backs with a large white spot near the tail. Not until they are a year old do they don the pure white plumage which marks the grown-up birds. These young birds in their gay plumage are often called "stone curlews."

Ibises are found in the warmer countries of both the Old and New Worlds. The ancient Egyptians held them sacred, especially one white African species, which is called the "sacred ibis" to this day. The bird's white plumage was said to be a symbol of the light of the sun; its bare, black neck, of the shadow of the moon; while its feathers were believed to scare, or even kill, the fearsome crocodile of the Nile. It was a remarkable bird!

The roseate spoonbill is now a rare bird in North America and is seldom seen except in certain islands and reservations in southern Florida, where it is protected by the state. Because of its lovely rose-colored plumage the people of Florida call it the "pink curlew," while its proper name, "spoonbill," comes of course from its curious spoon-shaped bill. The bird is not entirely



Photo by American Museum of Natural History

The white-faced glossy ibis is primarily a western bird. This one was photographed in California.

pink. Its neck, breast, and back are snowy white; its bare face and its bill are a curious greenish-blue color; and its feet are crimson.

There are spoonbills in almost all the warmer parts of the world—in Europe, Asia, Africa, and even in Australia. They are all fine big birds, with the same peculiar bill; but none of them has the wonderful bright pink wing plumage of the American bird, who is certainly the handsomest member of the spoonbill family.

Spoonbills are very shy birds. If you invade their quiet haunts in the mangrove swamps or salt marshes, at once they rise from the ground and go sailing away, their long legs and long necks stretched out behind and before and their great rosy wings flapping. It is not much use waiting to see them come back home again, for the timid birds are not likely to return until you yourself have taken your departure.

They spend their time, when left in peace, walking sedately on the muddy shore, standing on one leg when they wish to rest, and wading up to their shanks in the pools to feed when they are inclined for a little refreshment. They eat insects, frogs, small

BEAUTIFUL BIRDS OF THE SOUTHLAND

fishes, and shellfish, in fact anything not too big that swims in the water or buries itself in the mud. And they catch their prey by sweeping their half-open bills from side to side through the water or soft mud—afterwards raising their bills and munching up the tasty morsels they have captured with much relish before they decide to swallow the food.

Spoonbills are not noisy birds—and their voices are certainly not melodious—but as they move about feeding together they appear to exchange remarks in low, grunting tones and they clatter their beaks when they are excited. At night, too, when the flock goes to roost in the low trees and bushes, the birds always have a good deal to say to one another before they are all comfortably settled on their perches for the night.

Even more shy and retiring than the spoonbill is the strange, dark water turkey, who never comes near man's habitations but makes his home in the wildest, gloomiest swamps of the southern lowlands, where the air is so hot and steamy, the ground so water-logged, and the swarms of gnats and mosquitoes so tormenting that his somber sanctuary is seldom invaded by man.

The Dragon of the Southern Swamps

This "dragon of the southern swamps"—as he has been called—is a large bird, nearly three feet in length, of which a good share is neck and tail. He wears gloomy black plumage with some silvery feathers on his wings and a silvery fringe of fine hairlike feathers at the back of his neck. He has short legs and webs between all four toes of his powerful feet, a very long snaky neck, and a long

straight, daggerlike beak. His mate has a brown neck and breast and is not quite such a big bird.

The water turkey is rather clumsy on the ground, and when he takes to the air his flight is heavy and accompanied by a tremendous flapping of wings. But in the water the bird is thoroughly at home and swims and dives with the greatest ease.

Usually he swims low in the water with only his head and long neck above the surface. As he moves along, by paddling vigorously with his strong webbed feet, he twists and turns his small head and slender neck from side to side in such a way that it looks almost exactly like a snake rising from the water. And from this odd trick of his he is sometimes called the "snakebird."

Most of his time the water turkey spends in fishing, for he is a very hungry, not to say a greedy, bird. He will catch

and devour thirty or forty small fishes, one after another, in an astonishingly short time. Plunging under water, he spears a fish with his beak; then up he comes again, jerks the fish into the air, cleverly catches it, and swallows it head first. Sometimes instead of diving for his dinner the bird stands up to his neck in shallow water and snaps up the fish as they swim past in shoals.

Although naturally such shy and wary birds, water turkeys are easily tamed when captured while quite young. They will live happily in a park or garden, provided, of course, that there is a large pond for them to swim in and trees in which they can roost. Of course water turkeys are not really turkeys and they are not good to eat. They are diving birds, related to the cormorants.

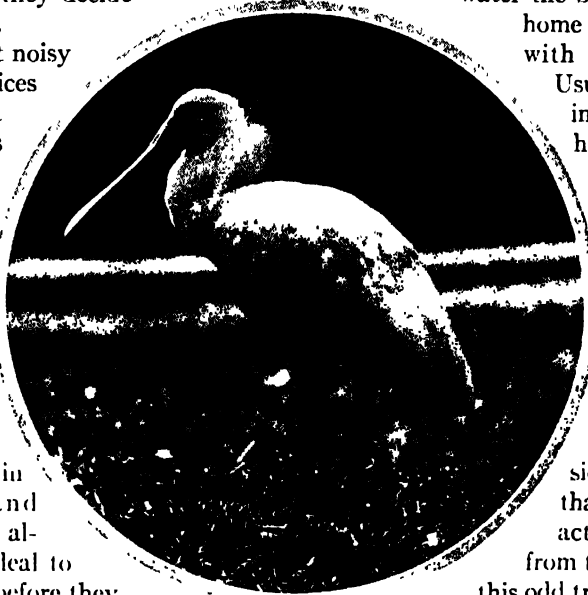


Photo by N. Y. Zoological Society

The roseate spoonbill is another bird that has suffered on account of his beauty. Formerly the wings were stripped off and made into ladies' fans!

The STORY of BIRDS

Reading Unit No. 17

FIERCE HUNTERS OF THE AIR

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

How birds of prey are fitted for their work, 4-151
Eagles, 4-151-53
Usefulness of hawks, 4-153
Outlaw hawks, 4-153-54

Pigeon and sparrow hawks, 4-154-55
The red-tailed hawks, 4-155-56
A hawk that fishes, 4-156-57

Things to Think About

What enables hawks and eagles to be hunters?
Why does the bald eagle live near water?
What good things can one say

about hawks?
Which hawks are nuisances?
What does one usually find in an osprey's nest?

Picture Hunt

Is the bald eagle protected by law? 4-151
How common is the golden eagle? 4-152

Is the bald eagle well named? Color plate opp. p. 4 152
Where is a good place to look for duck hawks? 4-155

Related Material

How do vultures resemble eagles?
How do they differ? 4-159

How are owls able to act as birds of prey? 4-164

Leisure-time Activities

PROJECT NO. 1: Find a hawk's nest. Study the occupants with field glasses and record your results.

PROJECT NO. 2: Visit a museum or study pictures till you learn to recognize any hawk you may see.

Summary Statement

Hawks and eagles are feathered beasts of prey. They have keen eyes, hooked beaks, and powerful

talons with which to tear their prey.

FIERCE HUNTERS OF THE AIR



Photo by American Museum of Natural History

The bald eagle is usually found near water. Its aerie, or nest, is placed in a tall tree, often near a lake where food is to be had. The same nest may be used for a number of years. The eagle is our

national emblem, yet some communities have put a bounty on it. Such folk think that a good eagle is to be found only on a coat of arms or a flagpole, and not in its natural home under the open sky.

FIERCE HUNTERS *of the* AIR

The Powerful Eagle and the Swift Hawk Both Find a Living by Preying on Other Smaller Birds

THE eagles, hawks, and vultures are the lions and tigers of birdland. Fierce hunters of the air are they, who live by preying on the weaker furred, feathered, and scaly folk of the animal world. These "birds of prey" are fine, strong birds clothed in firm, closely-fitting plumage. Their flight is strong and swift, their sight keen; and all of them have short, sharp, hooked beaks and long powerful talons with which to grasp and tear their prey.

Chief of his kind is the eagle. Though not the largest he is the most powerful of the birds of prey. So proud and splendid is he that he has won the title of the "king of birds," and has been chosen as the emblem of the United States.

The American eagle is the "bald eagle," which is really not at all a good name for the majestic king of the air. For the bird is not bald. His great head and neck are well clothed with snow-white feathers. His tail, too, is white, but the rest of his plumage is a very dark brown, and his hooked bill and sturdy feet are bright yellow. Young bald-heads are clad entirely in dark brown. They do not wear the snowy hoods or the white tail feathers of the grown-up eagles until they are three years old.

The bald eagle may be found throughout North America from Mexico to Alaska. He makes his home among the mountains, along rocky seacoasts, or in any wild desolate spot not too far away from water. There he

FIERCE HUNTERS OF THE AIR

lives, scanning the country with his bold bright eye from his perch on a rocky crag or the topmost bough of a tall tree. Sometimes he soars aloft and with his great wings outstretched he sails slowly round in circles, keeping a keen watch on the ground or the water below. Suddenly he swoops, dropping like a thunderbolt to the ground, and when he rises into the air again and sails away, some luckless victim is dangling from his claws.

The eagle will seize a lamb, a piglet, or any small wild creature not too heavy to carry away. Ducks and wild fowl of all kinds are an easy prey to the great strong bird; but perhaps more than anything else he likes a nice fresh fish for his dinner.

Now the bald eagle is no fisherman. He is an expert in capturing water birds, but with slippery fish that swim below the surface of the water he is not so clever. So the masterful bird makes the fish hawk—or cory—do his fishing for him. He watches until the fish hawk has captured a big fish and is flying off with it, then down he swoops and gives chase. The fish hawk is a swift and plucky bird, but he is no match for old "bald-head," who, with a blood-curdling shriek, strikes at him fiercely, forcing him to drop his prize. Then the eagle catches the fish before it falls to the ground and calmly sails away with it. If there are no fish hawks fishing

—which seems a very undignified thing for the king of the birds to do.

By the seacoast the eagle's nest—or aerie (ē'ri), as it is called—may be built on a high ledge on a steep cliff; but more often it is fixed up among the strong boughs at the top of some big tree. The boughs need to be strong, for the aerie is composed of a huge mass of broken branches and twigs, hollowed out in the center, where the white eggs rest safely on a rough bed of seaweed, moss, rootlets, or grasses. Eagles often use the same nest over and over again, each year adding some fresh sticks to the pile, which at last may be five or six feet across and nearly as high. The eaglets are at first dressed in whitish suits of fluffy down. They are fierce little things, and soon learn to tear at the food their parents bring them.

The golden eagle is an even more magnificent bird than his bald-head cousin. Occasionally, though rarely, he is seen in the Eastern United States, for his home is among the Rocky Mountains, where his nest is always placed on some lofty and almost inaccessible ledge of rock. The outstretched wings of this splendid bird often measure nine feet from tip to tip. It is a wonderful sight to see him circling slowly overhead, or hanging almost motionless in the air, the feath-



Photos by N. Y. Zoological Society

The eagle has stood for courage and bravery ever since the time of the Roman legions; and the bald eagles—shown here—are worthy representatives of their race. They can be told from the golden eagle by the feathered shank. The golden eagle is now rare in the United States.



and no fresh fish for the bald-head, he will often swoop down on the shore and feast upon dead fish cast up by the tide

ers on his head and neck shining like gold in the sunlight. Except for the golden sheen on his head and neck



After Paintings Supplied by the National Association of Audubon Societies

The birds on this page, some of them among the most fearsome of their kind, are all soberly but suitably clad. They are: 1. The double-crested cormorant, wearing his rich though unostentatious attire. 2. The great horned owl, who shuns the light of day.

3. The water turkey—which is not a turkey at all. 4. The kingly bald eagle, one of the mightiest of the birds of prey. 5. The osprey, a merciless hunter of the deep. 6. The skillful kingfisher. 7. California quail, male and female.

FIERCE HUNTERS OF THE AIR

this eagle's plumage is so dark a brown as to appear almost black, while his broad spreading tail is blackish brown barred or mottled with gray at the base.

So strong and bold is this great bird that it will swoop down upon a stag, and has even been known to attack a wolf; but usually he preys upon helpless fawns and lambs, hares and rabbits, ducks, geese, and all sorts of game birds.

Very different in his ways from the free, roving monarch of the skies is the harpy eagle—the “winged wolf,” as he is called, of South America. He is a huge fellow, enormously strong, but not nearly so courageous as his golden and bald-head relatives. In fact, it is said that a couple of impudent crows can put the great bird to flight.

The harpy eagle is a forest dweller, and unlike most of his kind is seldom seen on the wing. He spends his days flopping about through the trees or sitting bolt upright, very tall and straight, upon a bough, keeping a sharp lookout for prey. He is certainly a handsome bird with his crested head, white breast, and black and gray barred back, but he has the most wicked-looking eyes, a fearsome hooked beak, and he is the terror of all the spider monkeys, peccaries, and other small inhabitants of the South American forests.

Another monkey-eating eagle very much like the harpy lives in the forests in the Philippines. It is just as large and ferocious, and is distinguished by having an enormous beak. The harpy and the monkey eater are not so trim as other eagles; their plumage is soft and fluffy, more like the plumage of an owl, and they often look very much ruffled and untidy.

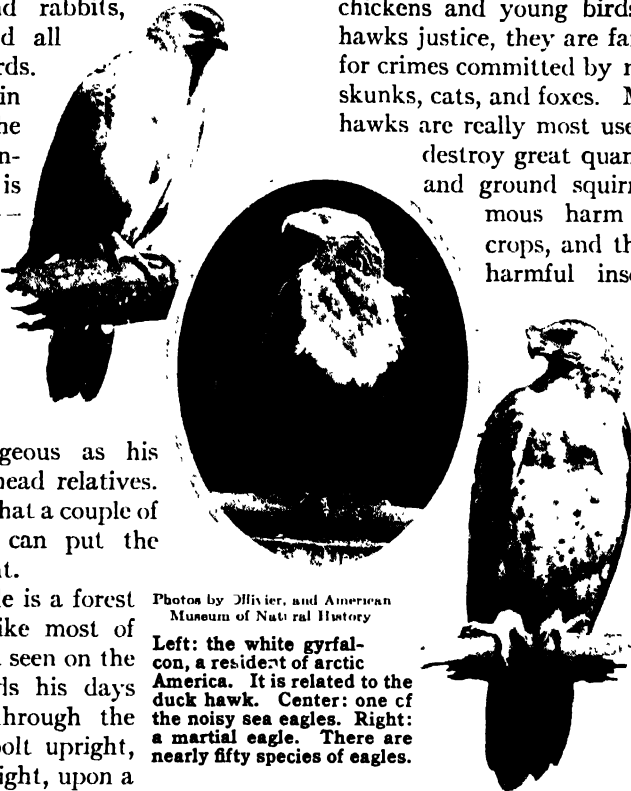
The hawks, of which there are large numbers all over the world, are just like small eagles, and they are quite as bold and fierce as their kingly relatives. In North America there are more than thirty different kinds of hawks, and most of them have a bad reputation among farmers and sportsmen, who accuse the smart little hunters of stealing chickens and young birds. But to do the hawks justice, they are far too often blamed for crimes committed by minks and weasels, skunks, cats, and foxes. Most of the smaller hawks are really most useful birds, for they destroy great quantities of field mice and ground squirrels that do enormous harm to the farmers' crops, and they eat numberless harmful insects that devour

foliage of valuable fruit trees and gnaw the roots and shoots of field crops. Many hawks, too, help to preserve the game birds by killing snakes and weasels and other murderous little creatures who devour the eggs and young ones.

Of course all hawks are not equally blameless. Some of them do raid poultry yards and game preserves. Two of the worst offenders are the sharp-shinned hawk and Cooper's hawk. Both these birds, who are found over almost the whole of North America, are wicked and daring little bandits. They will hide in the thick foliage of trees and bushes and make sudden swift sallies into poultry yards or game farms, seize a young bird in their claws, and dart away with it before the angry farmer or keeper has time to raise his gun.

Ruthless Hunters of the Air

Small wild birds, too, of every description go in fear of their lives when either of these two ruthless hunters is about. They will



Photos by Olivier, and American Museum of Natural History

Left: the white gyrfalcon, a resident of arctic America. It is related to the duck hawk. Center: one of the noisy sea eagles. Right: a martial eagle. There are nearly fifty species of eagles.

FIERCE HUNTERS OF THE AIR

swoop down on the poor, helpless little feathered folk, chase them through the air, and even overtake and capture a bobwhite in full flight.

Both the sharp-shinned hawk and Cooper's hawk are handsome birds. The first is not much bigger than a robin; the second is nearly as large as a crow.



Both are, when mature, a bluish gray above and barred with reddish brown below, but the tail

of the Cooper's hawk is more rounded than that of the smaller, sharp-shinned robber bird. Both are often called "blue darters" because of their way of darting about.

The "gay goshawk" (gōs'-hōk') is another bold marauder of poultry yards and game preserves. He, too, is a handsome fellow in gray-blue with a barred breast and tail, but he is a good deal bigger than the

other two hawks and more destructive.

The marsh hawk has many names, such as blue hawk, mouse hawk, and harrier. His loud, sharp "eezah, eezah!" or "eh, eh, eh, eh, eh!" is heard in many a damp meadow and open marshy district throughout the length and breadth of North America. He is a beautiful and most graceful bird, larger than a crow, and when he is flying his long, pointed wings make him appear bigger than he really is. It is a pretty sight to see the hawk sweeping slowly over a stream or a meadow when he is hunting, flying low with beating wings. Meadow mice, young rabbits, and ground squirrels are his favorite quarry, but he catches and eats large numbers of frogs, snakes, lizards, and big insects as well, while out on the prairies he is the

sworn foe of the plump little gophers that do so much damage to field crops.

Marsh hawks are faithful birds. When once they have chosen their mates they are said to live together for life. They will return year after year to the same grassy meadow, and after a little renovation will use the selfsame nest if it has not been disturbed while they have been away on their holiday. The nest is merely a pile of sticks loosely placed together to form a foundation and some tufts of grass, and a few dead leaves, perhaps, in the middle as a bed.

The babies when just hatched are covered with fluffy white down and are funny little objects, with their scrawny neck, bulging eyes, and hooked, snapping beaks. The father and mother hawk both



Photos by N. Y. Zoological Society

Left: the crested eagle. Center: the harpy eagle of South America, the fiercest of his tribe. Right: the Chilean sea eagle.

go out hunting for their little family, and keep a watchful guard on their home, swooping angrily at any creature who comes too near to please them. The young hawks are plucky little birds and will scream and strike out fiercely with their claws and beaks at anyone who dares to peep at their nursery while their parents are away.

A Beautiful North American Hawk

The pigeon hawk and sparrow hawk are both small birds only a little larger than the robin. But the sparrow hawk is slimmer and just a shade the smaller of the two; he has the distinction of being the smallest hawk of North America, as well as the most beautiful. The plumage of this little hawk is strikingly bright. His wings are blue-

FIERCE HUNTERS OF THE AIR



Photo by Audubon Museum of Natural History

This duck hawk is returning to her nest on the Palisades of the Hudson, near New York City. These bold birds were much used for hunting in days gone by,

gray; his breast is almost golden and flecked with black; his back and tail are chestnut red, the tail having a black band near the tip; and he has a chestnut crown on his dark gray head.

Why the Sparrow Hawk Is Misnamed

"Sparrow hawk" is rather an odd name for this smart little bird, for he seldom dines upon a sparrow. It would be much nearer the mark to call him the "grasshopper hawk," as he has a perfect passion for these insects. So long as there is a plentiful supply of grasshoppers and crickets in the land, the sparrow hawk cares for no other kind of food. The greedy little bird simply gorges himself with them until he cannot possibly swallow another one; but when the grasshopper crop fails, he will satisfy his appetite with beetles and spiders, little field mice and shrews, small snakes and lizards—and perhaps, now and then, with a sparrow.

When he is feeling excited and happy—particularly in the spring time, when he is thinking of the nest he and his mate are going to hide in a hole in a stump or some

and only men of high rank might own them. Even at birth the young do not know what fear is, and apparently they never learn to be afraid.

old dead tree—the sparrow hawk is a noisy little fellow. As he sweeps through the air or mounts up and up in circles, he shouts "kilee, kilee, kilee!" over and over again at the top of his voice. So in the South the farmers' boys almost always call the bird the "killy hawk!"

Among the larger hawks the red-tailed and the red-shouldered hawks are two of the best-known throughout nearly all parts of North America, the red-shouldered hawk ranging from the Gulf of Mexico to Canada, and his red-tailed cousin from Mexico and the West Indies to Alaska and Labrador.

The Soaring Flight of the Buzzard Hawk

These "buzzard hawks," as they are called, are not quite so quick and graceful as the falcons are. They have broad, rounded wings and are rather slow, heavy fliers, fond of soaring aloft and sailing lazily round in circles high in the air. They seldom pursue their prey as most falcons do, but keep a keen eye fixed upon the ground while they are soaring or surveying the country round from the dead bough of a tree, or the top of a

PIERCE HUNTERS OF THE AIR



knoll if they are in the open country. They are always ready to drop down upon any small creature they spy moving below.

These birds are often unkindly called "chicken hawks" or "hen hawks"—which is really too bad, as they seldom raid poultry yards. They feed chiefly on mice and other small furry beasts, frogs and lizards, crayfish, spiders, worms and insects, and should be counted as the farmers' friends. They do prey on small birds sometimes; and for this, or some other reason, the red-tailed hawk is very much disliked by crows—who have no scruples about killing small

birds themselves. So the crows mob the red-tail whenever they see him; and you may often know that one of these hawks is in a wood by the excited and angry cawing of the crows. But red-tail is no coward, he is not easily put to rout by a mob of spiteful crows. If, as they sometimes do, several crows attack the hawk all at once in the air, he shows fight; and every time one of his black enemies darts at him, the hawk turns over on his back and strikes at the impudent bird with his fearsome talons. Often, too, when he is annoyed or excited, red-tail expresses his feelings

by a prolonged high-pitched scream, which reminds one more of a steam whistle than of anything else. "Red-shoulder," too, has a loud, rather husky cry, which is often heard from overhead as the big bird sweeps round in great circles high up in the sky.

The osprey, or fish hawk, measures nearly two feet from the tip of his strong hooked bill to the edge of his broad, square tail; he is such a fine, lordly-looking bird that he is often mistaken for an eagle. His wings and back are dark brown; his head, throat, and breast are snowy white. A crest of short dark feathers crowns his head; and his great golden eyes glint at the world through a dark "bandit mask."

But the osprey is not an eagle, or even a true hawk. He differs in one way from all the hawk tribe, for he can turn his fourth toe backward or forward as he pleases—just as the owls do.

Along the wilder seacoasts, or by the large inland lakes and water courses, we must look



Photos by Cordelia J. Stanwood, Field Museum, and N. Y. Zoological Society

At the top of the page are two young hawks—looking their pleasantest for the photographer! The duck hawk, in the circle, has just brought down a blue-winged teal for its next meal. The bird at the right is a marsh hawk.

for the osprey, for he feeds entirely on fish and so is never to be found far from the waterside. It is a fine sight to see the great bird hawking slowly backward and forward with flapping wings over a stretch of water. Now he



FIERCE HUNTERS OF THE AIR

pauses for a moment, hovering in the air. Now, his wings motionless, he sails lazily around. Suddenly, swimming below, he sees a fish that takes his fancy. Then down he comes with a rush, plunges with a great splash into the water, and almost at once he is up again grasping a glittering silvery fish in his cruel-looking talons.

Away he flies with his prize to his favorite perch, the bough of an old tree. There he sits and with beak and claws soon tears his slippery prey to pieces and greedily gulps the morsels down. Fishes, as you know, have a slimy skin, and the osprey's feet are often much soiled by the time he has finished his meal. He does not like this, as he is a dainty bird in his ways; so before he starts fishing again, he will often proceed to wash his feet. This he accomplishes by dropping down close to the water and flying along with his feet just below the surface until once more he is spotlessly clean. Sometimes the hawk will dip his wings and his tail into the water, too, and then spring into the air shaking a shower of sparkling drops from his feathers.

What Goes into an Osprey's Nest

Ospreys build most enormous nests, sometimes on rocky ledges, sometimes on the ground, but more often in trees. The number of different things these strange birds think suitable for making their babies' nursery is almost beyond belief. After making a solid foundation of sticks, broken branches, pieces of driftwood, and clods of earth, they scour the beach and the countryside, seizing on anything that they can possibly carry away: broken boxes, yards of tarred rope, bones, corks, sacking, turtles' shells, dead crabs, bits of oilcloth, the wheel from a child's cart, old boots, tattered books, and battered dolls are some of the extraordinary things that have been found in an osprey's nest. The young ones ought to have plenty to amuse them as soon as they

are able to "sit up and take notice." In the middle of all the jumble the parents make a flat round bed of seaweed, eelgrass, weed stalks, and moss.

Sometimes a pair will choose a solitary spot for their nest, but more often ospreys build in colonies and live peacefully side by side while they are rearing their young ones. One of the largest of these colonies is on Gardiner's Island, off the eastern end of Long Island, in New York. There, since they are not interfered with, the birds come regularly to build their nests, and as many as three hundred have been counted on the trees and stacks, the roofs of sheds or other buildings, and flat on the beach above high-water mark.

The Troublesome Old World Kites

Some Old World kites are far more troublesome in their ways than most members of the hawk tribe, who, on the whole, are most useful birds. Kites are often a perfect pest to poultry keepers, and when one of these winged brigands is seen wheeling over the poultry yard, all the fowls begin cackling and dashing wildly about in their fright. Kites are found in both the Old and New Worlds, chiefly in the warmer countries, and may be known from other kinds of hawks by their forked tails. In Eastern countries they are often useful, as the vultures are, in clearing away refuse, but they are most impudent thieves. In India they sometimes swoop down and snatch food from the dishes carried across courtyards by native servants.

There are many kites in South and Central America, but only two or three come so far north as the United States. The white-tailed kite, a handsome bird with ruby-red eyes, nests in southern California, and the swallow-tailed kite, the most graceful and elegant of his kind, is a regular summer visitor in the southern states. In Florida the bird is called the snake hawk, from its habit of catching and eating small snakes.

The STORY of BIRDS

Reading Unit

No. 18

BIRDS STRANGE AND FEROCIOUS

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

Habits of vultures, 4-159-61
Why some vultures are protected by law, 4-161
The largest flying bird, 4-162

Turkey buzzards, 4-162-63
The secretary bird, 4-163-64
Owls and their ways of living, 4-164, 168

Things to Think About

How do vultures differ from other birds of prey?
How large is a condor's wing-spread?
How does the secretary bird get its dinner?

In what ways is the owl a bird of prey?
Why should owls be protected?
Why is the great horned owl hated?

Picture Hunt

What special distinction has the condor? 4-159
How can you recognize a vulture? 4-160
What keeps a condor in the air? 4-161
Why is the secretary bird so

named? 4-162
Why is the owl a useful citizen? 4-163
Why is the barn owl rarely seen in the daytime? 4-164
Where are an owl's eyes? 4-167

Related Material

How do owls differ from hawks in habits and in structure? 4-151, 153-57

How does the flight of an albatross resemble that of a condor? 4-215

Leisure-time Activities

PROJECT NO. 1: Try to find an owl's roost. Look underneath for furry pellets. What do you

find in them? What proof are they of the owl's usefulness?

Summary Statement

Vultures, though built like eagles, no longer hunt prey but feed on dead or dying animals. Owls are like hawks in their fe-

rocity, but fly after sundown, devouring great numbers of mice and rats.

BIRDS STRANGE AND FEROCIOUS



Photo by American Museum of Natural History

Condors are the largest flying birds known. They belong to the vulture tribe. Above is the Andean

condor, which inhabits the lofty mountains for which it is named.

BIRDS STRANGE *and* FEROCIOUS

From the Relentless Vulture to the Solemn Owl the Birds of Prey Have Always Been Unpopular with Men

IT WAS not by accident that the warlike Romans chose the eagle to perch upon their standards, or that he is the emblem of strength and determination to-day. For he and the darting hawk are the terror of the farmyards and of all smaller birds, which they hunt mercilessly both on the ground and in the air. No wonder they have been called the lions and tigers of birdland.

Birds of prey of a different character from the eagles and



Photo by N. Y. Zoological Society
Above is the featherless head of the South American condor. Our own California condor rivals these birds in size.

hawks are the vultures. They are more like hyenas than like lions or tigers; for like those ugly slinking beasts the vultures are natural scavengers of the wild. Too lazy or cowardly to hunt or kill for themselves, they live upon dead animals or any bad, decaying stuff they find lying about on the ground. They will sometimes kill small, helpless animals, such as baby pigs and newborn lambs, or attack a sickly goat or sheep unable to defend itself. But, as a rule, vultures wait until the poor

BIRDS STRANGE AND FEROCIOUS



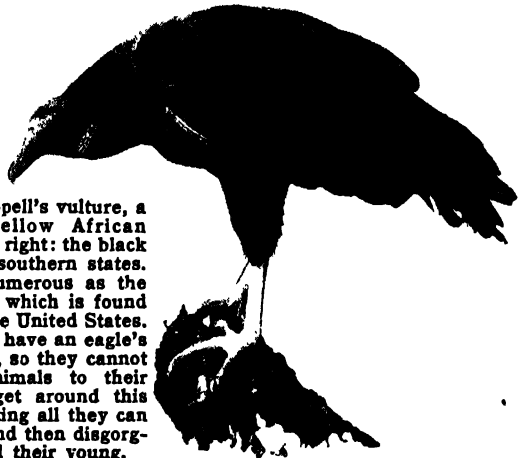
The griffon vulture, shown above at the left, is the common vulture on the continent of Europe. It nests in large numbers on the steep cliffs around Gibraltar. Above at the right is the king vulture of South America, a bird with creamy-white and black feathers and a head that is bare and vividly colored. It is found from Brazil north to Mexico and Texas, and even in Florida.



At the left is a closer view of the strange head of the king vulture. It is bare of feathers, and the leathery skin and bill are vividly colored with red, yellow, and blue. The effect is startling. Both males and females have that queer fleshy growth on the beak. The king vulture lives farther north than the condors do, but very little has been found out about its habits.



At the left: Rüppell's vulture, a brown and yellow African species. At the right: the black vulture of the southern states. It is not so numerous as the turkey vulture, which is found over much of the United States. Vultures do not have an eagle's powerful claws, so they cannot carry large animals to their nests. They get around this difficulty by eating all they can possibly hold and then disgorging it to feed their young.



Photos by N. Y. Zoological Society

BIRDS STRANGE AND FEROCIOUS



Photo by N. Y. Zoological Society

This South American condor is displaying its handsome wings, which may measure as much as twelve feet from tip to tip when they are outspread. Darwin, the great scientist, wrote, "When the condors are wheeling in a flock round and round any spot, their

flight is beautiful. Except when rising off the ground, I do not recollect ever having seen one of these birds flap its wings. Near Lima I watched several for nearly half an hour, without once taking off my eyes; they moved . . . without giving a single flap."

thing is quite dead. They are often to be seen perched in the trees or sitting on the ground round about some dying creature, patiently waiting until it has drawn its last breath. In half-civilized countries both in the New and Old Worlds these scavenger birds are exceedingly useful, for they clear away refuse thrown out by the natives into the open streets. The Egyptian vulture—or "pharaoh's chicken," as it is often called—is actually protected by law for its services in this way, and the ugly bird may be seen walking about the streets quite fearlessly picking up bones and scraps. Sometimes two or three of them will quarrel and hiss and fight over a tempting morsel; or one of the cunning birds will seize a big bone, mount with it high in the air, and drop it on a rock below, to break the bone in order the better to enjoy the marrow it contains.

The "great bearded vulture," one of the largest vultures of the Old

World, plays the same trick with land tortoises, and this has gained for it the popular title of "bone breaker."

The Perfect Flight of the Vulture

In appearance the Old World vultures are certainly not attractive. They are large, heavy birds with untidy, ruffled feathers. They all have small, mean-looking, bald heads, bare, scraggy necks, and most evil-looking eyes; and when sitting hunched up in their favorite attitude with heads thrust

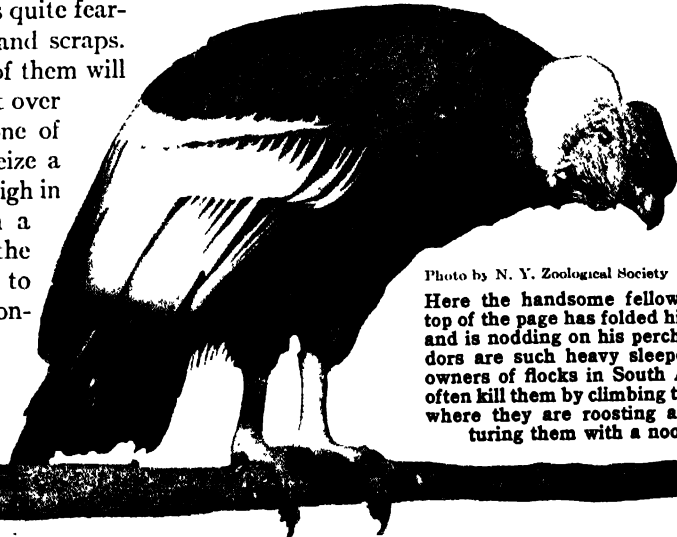


Photo by N. Y. Zoological Society

Here the handsome fellow at the top of the page has folded his wings and is nodding on his perch. Condors are such heavy sleepers that owners of flocks in South America often kill them by climbing the trees where they are roosting and capturing them with a noose.

BIRDS STRANGE AND FEROCIOUS

forward they look absolutely repulsive. But on the wing they are unrivaled in the perfection of their flight. With scarcely a wing beat the great birds will soar overhead for hours, sweeping slowly and majestically round in wide circles, while they watch not only the world below, but keep an eye on each other as they sail round in the sky. So when one vulture descries food and drops to earth, he is quickly followed by another and another until a dozen or more, perhaps, are assembled at the feast. There, should the animal they have discovered be a large one, such as a mule or a camel that has fallen out from a caravan to die, the unpleasant birds will sit and gorge until not a scrap of meat is left on the creature's bones.

The Largest of Birds That Fly

The American vultures are different in certain ways from the vultures of the Old World, but so far as looks and manners are concerned, there is little to choose between the two families.

The condor of the Andes is the largest of all birds that fly, measuring up to two've feet across its outstretched wings

The Cali-
fornia vul-

ture is almost, if not quite, as huge. But better known in North America is the turkey vulture—or "turkey buzzard," as it is more generally called. Although not nearly so large as the condor, it is a fine big bird about thirty inches from beak to tail, with dark plumage and bright red naked face.

Scavengers of the Wayside

Turkey buzzards are more common in the South, where they play their part of scavengers very thoroughly. Not a dead rat or snake is left long by the wayside where there are many of these vultures in residence. In many a southern city they patrol the streets and the outlying districts, clearing away all refuse from garbage piles and dumps. By helping to keep the air pure, the birds are decidedly useful. On sea beaches they eat up all the dead fish, and out on the western prairies and ranches they see to it that no dead animal is left lying on the ground for long. In the marshy country they will even feed on the floating body of a dead alligator. In small villages the turkey buzzards will wait round about the butcher's premises and clear away all skin and refuse thrown out



Photo by N. Y. Zoological Society

The secretary bird is an African representative of the birds of prey. The feathers behind the head are supposed to represent a number of pens stuck behind the ear; hence the bird gets its popular name.

BIRDS STRANGE AND FEROCIOUS

into the yard. They gather round the pigpens and snatch up some of the pigs' food. They sit about on house roofs, sunning themselves with wings outspread, or perched on the chimneys to enjoy the warmth coming up from below; they do not seem to mind the smoke at all. A story is told by Mr. G. Pearson of a lady who, "while sitting alone in her room was much startled when a beef bone fell down the chimney and rolled out into the hearth. Going outside she discovered a turkey buzzard peering down the chimney in quest of his prize."

Though these strange birds hunt alone, or only gather together by day to join in a feast, at night they often assemble in numbers in "buzzard roosts"—as their sleeping quarters are called. Sometimes a group of dead trees in a wood is the nightly meeting ground, but more often the buzzards flap their way to a marsh, where their slumbers are not likely to be disturbed by intruding human folk.

Turkey buzzards do not trouble to build nests. They lay their eggs and rear their young ones in a hollow log or tree stump in a wood or swamp, and in central Florida the birds often take possession of little caves or "sink holes" in limestone rocks. The ugly, naked-faced little babies are covered with a coat of fluffy white down when hatched. And this gave rise to the homely old saying, "Every

old buzzard thinks her young one the whitest."

In the gulf states the black vultures are even more numerous about the cities than the turkey vulture. They are somewhat smaller, have shorter tails and black faces, and are commonly called "carriage crows."

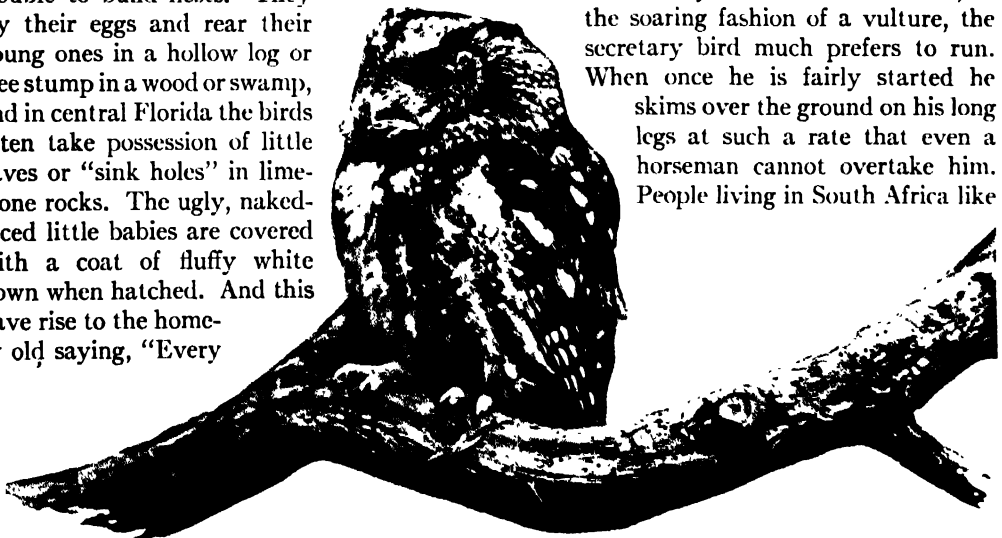
Quite unlike all other feathered hunters is the odd secretary bird of South Africa. He really is "odd" because, like Kipling's cat, he "walks alone." Although he decidedly is one of the birds of prey, he has no close relatives among them; and so learned folk who know about birds, have been obliged to put him in a class all by himself.

The most peculiar thing about the secretary bird is his surprisingly long legs. He stands over four feet high, and looks more like a hawk on stilts than anything else. On his head he has two tufts of long feathers which are supposed to resemble old-fashioned quill pens stuck behind his ears; this is what gives him his name. Although he can fly very well when he chooses, in the soaring fashion of a vulture, the secretary bird much prefers to run. When once he is fairly started he skims over the ground on his long legs at such a rate that even a horseman cannot overtake him. People living in South Africa like



Photos by N. Y. Zoological Society

Above is the milky eagle owl of the Tropics. Below is the common screech owl of North America. His weird notes are not at all pleasant to hear after dark. Owls hunt at night and spend the day sleeping in a high pine tree or in other concealed places. To help them in hunting for their prey they have extremely delicate ears, and can hear without difficulty the soft rustle of a little mouse in the grass. Though among ignorant people the owl is thought to bode ill luck, the Greeks considered it the bird of wisdom. To-day we know that it is extremely useful in killing vermin.



BIRDS STRANGE AND FEROCIOUS

to have this odd bird about the farms and homesteads, as one of its chief delights is to hunt and kill snakes—not only small, harmless snakes but quite large poisonous ones. He stalks about sedately, his bright, restless eyes glancing now this way, now that way until he spies one of his wriggling enemies. Then he is on it in a flash! He kicks it and jumps on it with his strong clawed feet, and he pounds it with his powerful wings until the snake is dead or senseless; then he swallows it head first.

When there are no snakes for him to kill, the secretary spends his time hunting insects, lizards, and tortoises; and like the bearded vulture, when he captures a tortoise with a shell too hard to crack he carries it up into the air and dashes it to the ground.

The little creatures of the wild are never wholly free from fear. As soon as the beasts who hunt by daylight seek their lairs, the night hunters are on the prowl. When hawks and eagles go to roost, the startling cry of the owls strikes terror to the hearts of sleeping birds and sends wee timorous beasties scurrying to cover.

Few birds have been more abused and misunderstood than the owls. In old days they were believed to be the companions of witches and to

bring all sorts of trouble and disaster to all who heard or saw them. Even now there are a few superstitious, ignorant people who say an owl brings bad luck and are quite upset when they hear the birds hooting and crying in the night.

To be sure there is something weird and uncanny about an owl. In the first place, he seldom appears until the shades of night surround him with a cloak of mystery. He moves silently through the dim light on his noiseless wings; and his thick feathery coat is so soft and downy that the owl seems to float through the air as lightly as a ball of thistledown.

Then, the owl's face is very strange. Round his great eyes is a large flat rosette of stiff feathers—called the "facial disk"—which gives him a wise and solemn air. In the daytime he contracts the pupils of

his eyes and draws a thin skin like a curtain over them, for he cannot bear strong light; but at night the owl's eyes are wide open, and glow in the darkness like two round lamps. His hooked beak and strong, curved talons are like the beak and claws of the daylight birds of prey, but he can move his outer toe backward and forward as he pleases, just as the osprey can.

So taking him by and large, it is not altogether surprising that the owl's love of darkness, his weird appearance, and his startling hoots and wails gave him a bad reputation in olden times, when people knew very little about him.

As a matter of fact, the owl is one of the most useful birds we have. He is perfectly harmless, except to mice and



Photo by N. Y. Zoological Society

Here are two baby barn owls, looking extremely wistful. No bird attracts more attention than the barn—or "monkey-faced"—owl. Even though its range includes all of the United States, it is not often seen. It often nests in a hollow tree, and during the day both parents are found at home.



Photo by N. Y. Zoological Society

At the right is a grown-up barn owl. As you see, it is an altogether charming bird.

BIRDS STRANGE AND FEROCIOUS

rats and such "small deer," and in killing them he is doing the farmers and fruit growers valuable service. So instead of being killed and persecuted, owls should be encouraged and protected.

Owls are found in almost all parts of the world, and live in all kinds of places in the country. Some love the seclusion of woods; others make their homes in rocky ravines. Some choose old buildings and ruins as their habitations; and the queer little burrowing owl lives in holes on the sandy plains of both North and South America—a scattered tribe.

Among the night-hunting birds of prey the screech owl and the barn owl are perhaps most widely known in North America, for they like to live around farms and country houses instead of right out in the wilds. The screech owl will often take up his residence in an old barn or shed, where he is not disturbed in the daytime; and he is particularly fond of an old apple orchard, where there are plenty of roomy holes in the decaying trees to hide in. He is very much attached to his home, and when he finds a place to suit him, he and his mate will stay on there for years if they are allowed to live in peace; for this old-fashioned couple does not like changes.

Curiously enough, screech owls are not all the same color. They may be dressed either in gray or reddish brown. There seems to be no regular rule about it. Very often the male owl is red and his wife gray, or the female may have reddish plumage while her mate is gray; and the little owlets may be all red, all gray, or some of one color and some of another. But whether they are

red or gray, these plump little owls always have feathery ear tufts which stand up like horns on the tops of their heads.

So quiet are the owls by day that you might never discover where they are living—unless they have a brood of young ones at home, when a strange hissing and snoring noise coming from some old tree will often give the secret away. Sometimes, too, you track them by the little pellets of the indigestible parts of their food which the owls disgorge after each meal, and which are often strewn around at the foot of the tree.

After sleeping away the daylight hours the owls become very wide awake when the sun has gone down. As soon as twilight falls they leave their cozy corner and sitting for a few minutes on a bough, they peer into the growing darkness, turning their big heads from side to side. Then suddenly they open their wings and float silently away. All night long they hunt for mice, shrews, and other small fry, flitting like shadows over the fields and countryside. As you lie snugly in your bed you may hear their shivering, wailing cries out in the darkness. Then in the dawn, when other birds are just beginning to wake up, the owls fly home to bed.

Besides mice and shrews screech owls will eat lizards, small frogs, spiders, scorpions, insects, fish and crayfish, and birds, too, if the birds stay out too late at night. Well all small birds know that the owl is their deadly enemy. They know, too, that in the daytime he is practically harmless, as he is blinded and bewildered by strong light. So if they do catch the owl abroad



Photos by Nature Magazine and N. Y. Zoological Society

The short-eared owl, above, nests in swampy places, a characteristic that is not common to most owls. He is extremely tame, and a very affectionate bird. Below is the great horned owl, more commonly known as the "hoot owl." Both of these owls breed within the limits of the United States, often near the habitations of man, but because of their habit of coming out only at night, they are not often seen. The horned owl is sometimes quite destructive to poultry; but the screech owl lives on rats and mice.



BIRDS STRANGE AND FEROCIOUS

when the sun is up, all the birds in the neighborhood fly round and mob him, scolding him and chasing him and making such a racket that he is glad to slink away and hide his head. The poor owl is not a popular bird.

The barn owl follows much the same program as the screech owl. While the sun is shining he sits and blinks and dozes in some dark corner of a barn or an old tree or belfry. At night he goes hunting. As a rule he hunts silently, but when excited he gives a startling screech or makes a sharp, spitting noise, like an angry cat. He is bigger than the screech owl, and his white face and pale creamy breast give him a ghostly look when you catch sight of him in the twilight.

Baby owls are the funniest little balls of fluff imaginable, but although they look so soft, they have sharp beaks and claws which they soon learn to use. They are very much upset if anyone looks at them. They hiss and claw and snap their beaks and bob about in the most ridiculous fashion. In an owl's nursery there may be three or four young ones of different sizes, as they are not all hatched at the same time; and sometimes the older children help to hatch their younger brothers and sisters.

They are terribly hungry youngsters. The old owls are kept busy all through the night hunting for their little family, and every time father or mother returns with a mouse or something else good to eat, the owlets hiss with excitement, seize the food, and tear it

fiercely to pieces—as if they were starving.

The long-eared owl, with its black, white, and buff plumage and its long ear tufts, is one of the handsomest owls of North America. It lives in swamps or evergreen woods, and like the screech owl and barn owl, hunts mice and small furry beasts. It also catches the velvet-coated

moles when these creatures of the dark underworld show their wriggling noses above ground and come up for a stroll in the evening. Beetles, too, and other insects the long-eared owl much enjoys.

But very rarely does it prey upon birds; so in every way it is a well-behaved bird.

A mother long-ear usually deposits her white eggs in an old squirrel's or crow's nest, and while she is sitting, her mate keeps guard over her, sitting bolt upright on the edge of the nest or on a bough close at hand when he is not out

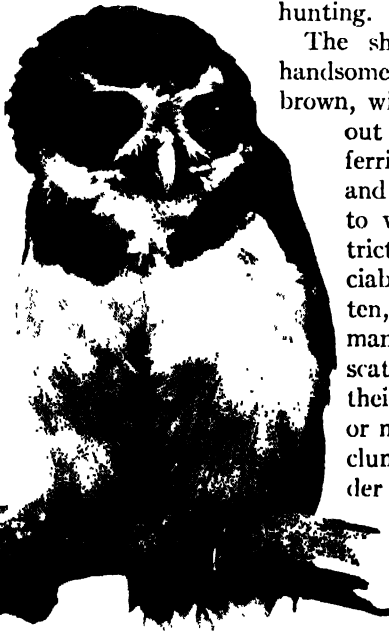
hunting.

The short-eared owl, another handsome bird, clad in buff and brown, with short ear tufts, lives out in the open country, preferring swamps and marshes and such damp, lonely places to woods or populated districts. This owl is more sociable than most of its tribe; ten, twenty, or sometimes as many as a hundred form scattered colonies and make their nests in the same fields or marshes on the ground in clumps of thick grass or under the shelter of low bushes.

Owls are not noted for their nest building. Most of them simply lay their white eggs in some convenient hole



The elf owl, here shown looking out of its burrow, is found in the southwestern part of the United States. The spectacled owl, below, is a charming fellow. When young his head is entirely white except for the black spectacles. But as you see, he changes a good deal as he grows up until, at maturity, he looks as he is shown here. His home is in Northern South America.



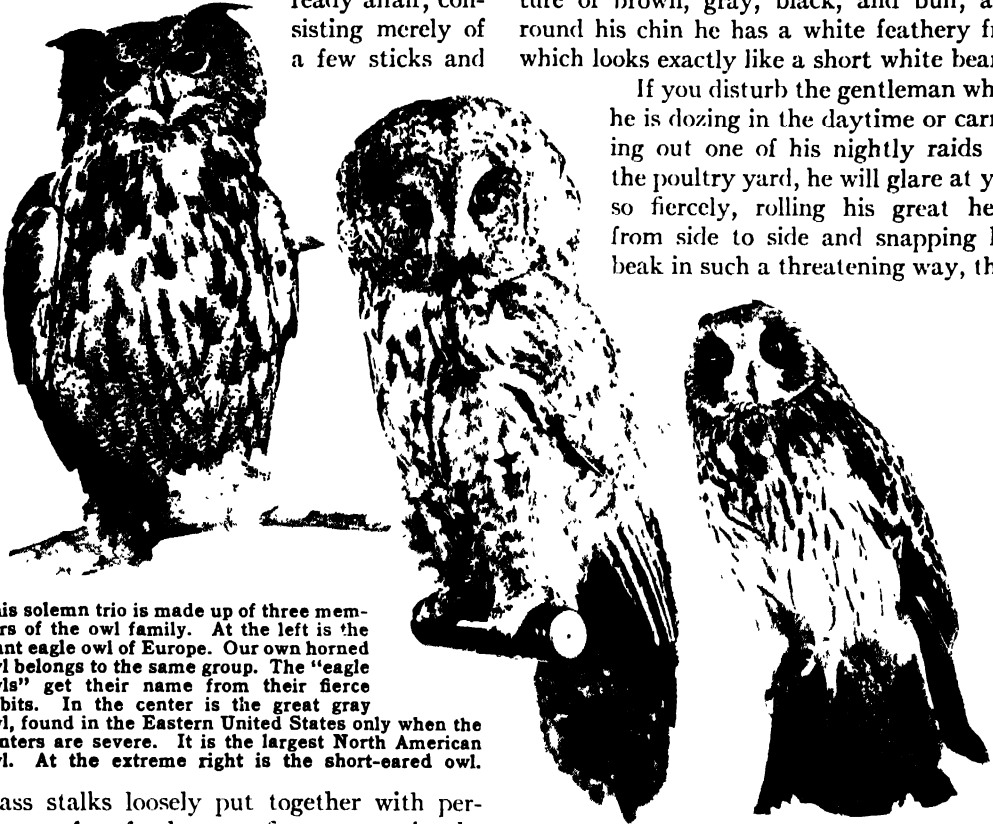
Photos by N. Y. Zoological Society and Nature Magazine

BIRDS STRANGE AND FEROCIOUS

—either a natural one or one that has been hollowed out by a flicker—or they take possession of a nest built by some other bird. But the short-eared owl does make an attempt at a nest, although it is a rough-and-ready affair, consisting merely of a few sticks and

—which is nearly as long as the eagle owl of Northern Europe and Asia, who is the giant of the owl tribe. His “horns” are his two long ear tufts, which stand up like horns on the top of his head. His plumage is a mixture of brown, gray, black, and buff, and round his chin he has a white feathery frill which looks exactly like a short white beard.

If you disturb the gentleman when he is dozing in the daytime or carrying out one of his nightly raids on the poultry yard, he will glare at you so fiercely, rolling his great head from side to side and snapping his beak in such a threatening way, that



This solemn trio is made up of three members of the owl family. At the left is the giant eagle owl of Europe. Our own horned owl belongs to the same group. The “eagle owls” get their name from their fierce habits. In the center is the great gray owl, found in the Eastern United States only when the winters are severe. It is the largest North American owl. At the extreme right is the short-eared owl.

Photos by N. Y. Zoological Society

grass stalks loosely put together with perhaps a few feathers or fine grasses in the center to make a bed.

Like its long-eared cousin this owl bears a very good character. It seldom kills birds, but preys upon mice, shrews, gophers, with an insect or two as a change now and then.

The Bad Habits of the Great Horned Owl

Not so blameless is the “great horned owl,” or his near kinsman the barred owl, who, with their snowy cousin of the far north, are the biggest owls of North America. Both these birds are often called “hoot owls,” and live in lonely swamps or wild wooded parts of the country, and rarely visit inhabited districts except for the evil purpose of raiding the poultry yards.

The great horned owl is the worst offender. He is a huge stout fellow, twenty inches long

I am sure you will feel it wiser not to interfere with the great bird—especially when you have glanced at his big hooked claws, which are really most terrible.

Unless the day is very dark and cloudy the horned owl seldom leaves his retreat in the dense wood until the sun has gone down. He spends most of the day dozing or flopping about among the thick, shady forest trees. In the dusk he sallies forth, and all through the night his deep “whoo-hoo-hoo-hoo!” is heard as he sweeps over the countryside hunting for his supper. Sometimes he changes his cry and gives a piercing, blood-curdling shriek, which is enough to freeze with terror all the little creatures who hear it.

The barred owl acts in much the same way,

BIRDS STRANGE AND FEROCIOUS

though he does not rob poultry yards quite so frequently as his horned cousins. You can tell which of these two owls is about in the night by their cries. For while the horned owl's "whoo-hoo-hoo-hoo!" is made up of four notes all in the same pitch, the barred owl's hooting is much more varied in tone, and sometimes even sounds like a wild, frenzied burst of laughter.

Both these great owls eat a great many mice, rats, and other troublesome little creatures; so to give them their due, they really do much more good than harm. This is especially the case with the barred owl, who only occasionally so far forgets himself as to turn thief and steal chickens and game birds.

The Great Eagle Owl

The "great eagle owl" of the Old World is not only the largest but the most ferocious of its kind. It has a black beak and flaming orange eyes, and when irritated, dashes at its enemy, hissing and snapping in the most threatening manner. It swoops down on young lambs and fawns and devours them on the spot; to say nothing of the rabbits, hares, game birds, or any other defenseless creatures that catch its bold, bright eye as it sails overhead in the twilight crying fiercely, "Boo, boo! Boo, boo!"

Creatures the Snowy Owl Hunts

A much more likable bird is the fine snowy owl of the arctic regions, though he, too, is a bold, powerful hunter whom it does not do to trifle with. He is almost as large as the eagle owl, and is clothed from head to tail in beautiful snow-white feathers, with here and there a few touches of black, which, by contrast, make him look all the whiter. In his desolate northern home the huge bird skims over the barren wastes and drops down on and devours on the spot sea birds, grouse, ptarmigan, arctic hares—and, it is said, even arctic foxes. He also catches fish and takes the musquash from the traps set by hunters. But above all the snowy owl hunts the destructive little lemmings—those small, mouse-like creatures that often swarm in countless numbers in cold northern lands. At times

vast armies of lemmings collect together and march across country destroying every blade of grass on their way; and whenever this happens the snowy owls are sure to follow the army and enjoy a royal feast.

In severe winter weather the snowy owl will often forsake the frozen north for a while and pay a short visit to the Northern United States, or even as far south as Texas.

Some Strange Little Owls

Besides these giant owls there are a number of little pigmy owls in many parts of the Old World, as well as in South America and Southern North America. Few of them are larger than eight inches long, many are only six, but they are all bold, determined little hunters, as other small birds and little field mice know to their cost. They are useful, too, in destroying great quantities of locusts and other large insects.

But most interesting of all small owls are the queer little burrowing owls of the prairies. They are only about nine inches long, and have spotted plumage and long, thin legs. The two most remarkable things about them is that they are usually to be seen out and about in broad daylight, and that they live in underground burrows with the little brown marmots.

These funny little owls, says Major Bandire, "may be seen in front of their burrows at any hour of the day. They are not at all shy, and usually allow one to approach them near enough to note their curious antics. Their long, slender legs give them a comical look, a sort of top-heavy appearance, and they are proverbially polite, being sure to bow to you as you pass by. Should you circle round them they will keep you constantly in view, and if this is kept up, it sometimes seems as if they were in danger of twisting their heads off. If you venture too close, they will rise and fly a short distance, and generally settle down near the mouth of another burrow close by, uttering at the same time a chattering sort of note, and repeating the bowing performance."

Sometimes in addition to a pair of these little owls a rattlesnake will take up his quarters in a prairie marmot's burrow.

The STORY of BIRDS

Reading Unit No. 19

FEATHERED SONGSTERS OF OLD ENGLAND

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

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The thrush and the Robin Red-breast, 4-171-72
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Things to Think About

What makes the nightingale's song famous?
What differences are there between the American and the English robins?

What bird uses thousands of feathers in making its nest?
What important instinct has been lost by the cuckoo?

Picture Hunt

What habit of the cuckoo may destroy a family of young birds? 4-170
What famous bird is related to our robin? 4-171

Why do parent titmice have to work hard? 4-173
How do large eggs find their way into a nest meant for smaller ones? 4-174

Related Material

How are baby cowbirds raised? 4-89
How do American meadow larks live? 4-86-87

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How can one learn to remember bird songs? 4-5

Summary Statement

English birds are very much like those of America. The most famous are the nightingale and

the skylark, both excellent singers.

FEATHERED SONGSTERS OF OLD ENGLAND

This young cuckoo is an unwanted child in the nest of its foster mother, a little meadow pipit. After having starved out the rightful children, the big baby is being fed by the much smaller bird. Our American cuckoos have not taken to such dishonest ways as their English cousins.

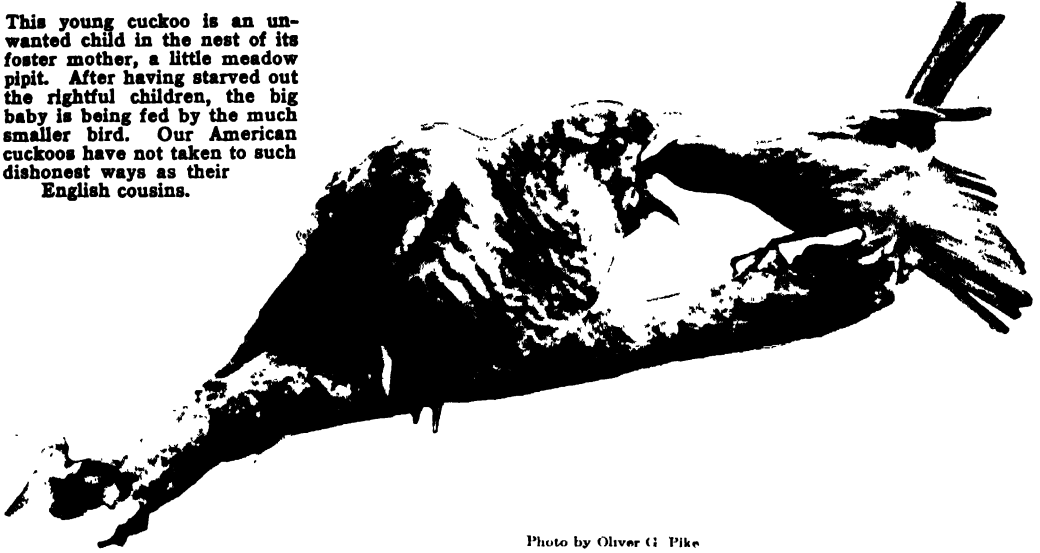


Photo by Oliver G. Pike

FEATHERED SONGSTERS *of* OLD ENGLAND

The Home of the Lark and the Nightingale Boasts Many Other Tuneful Birds besides Its Two Most Famous Singers

FROM THE green lanes and thickets of Southern England there comes each year in the springtime a small brown bird. He is a plain-looking little bird. No touch of crimson, blue, or gold lightens his quiet though neat attire. There is, indeed, nothing very much about him to attract attention. Yet this modest little fellow is more welcomed and admired than any other English bird. For he is the nightingale, whose praises, because of his marvelous voice, have been sung over all the world.

The nightingale does not sing at night only, as many people imagine. In the daytime, when all the birds are singing, his voice is not always recognized amidst all the chirping, trilling, and warbling that fill the air in early summer days. But at night, when the cheerful bird chorus has died away, then the nightingale's song—so rich and full, so sweet and clear—rings out over the countryside, thrilling with delight everyone who hears it. In May or June, when the nightingale is singing, people often come from far and wide just to listen to him. And almost every year now, his song is broadcast throughout

the land, so that less fortunate folk, who cannot leave the towns and cities, may enjoy it too.

Some say that the American mocking bird and the English blackcap sing quite as beautifully as the nightingale, and that it is chiefly because he sings when other birds are silent that he has gained his famous reputation. And no doubt the magic of a soft June night and the sweet scent of the hawthorn, which blooms at the time, do lend an added charm to the thrill of the little brown bird's glorious song.

The nightingale does not sing for very long. If the nights are warm he usually starts his song about the middle of May, and after the second week in June his voice is seldom heard. By this time he and his mate have a nestful of young ones in the thick undergrowth of a tall hedge or shrubbery, and he is so busy catering for his family that he has no time to sing. When summer is over away they all go to enjoy the warmth and sunshine of Northern Africa, and the nightingale is heard and seen no more until spring is with us once again.

FEATHERED SONGSTERS OF OLD ENGLAND

As you might guess from the spotted breasts of these young nightingales, they belong to the same family as our American robins. In fact, they even look like baby robins. Do not, however, think that all young birds with spotted breasts are members of the thrush family, for if you do, you will be sorely misled. It is the father of these youngsters who is the beautiful singer.

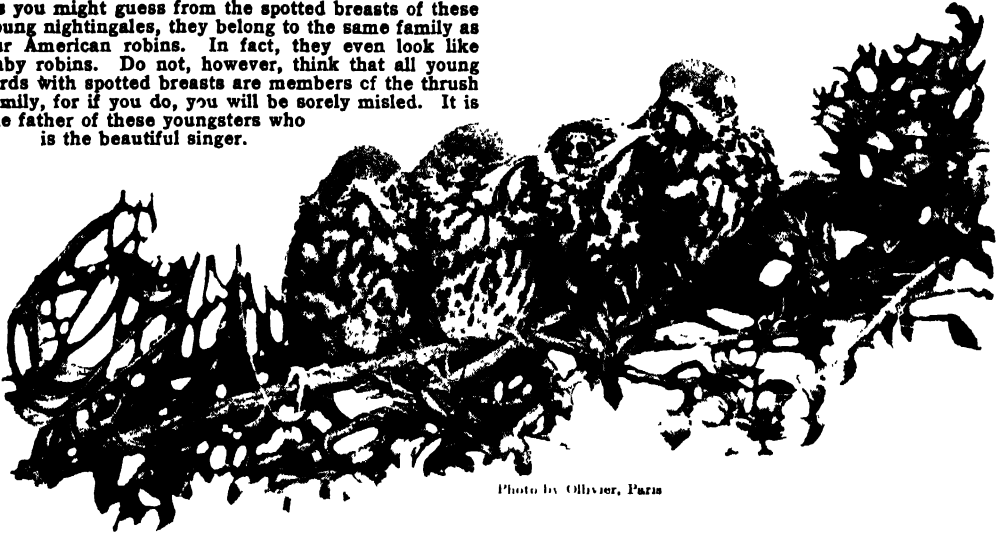


Photo by Ollivier, Paris

Not only in England is the song of the nightingale heard. Many of the little brown birds spend the summer on the continent of Europe, where they are well known from the Mediterranean coast to Northern Germany.

There are many sweet singing birds in England besides the famous nightingale. Among them are several who are very much like their cousins in America. The wee wren trills in the garden shrubbery. Thrushes and blackbirds whistle and sing in the woods and orchards as cheerily as their namesakes on the other side of the Atlantic. The song thrush, with his soft brown coat and spotted waistcoat, anyone could tell at a glance was a near relative of the wood thrush. He is a great favorite in most parts of the British Isles, for his cheery voice is heard almost all the year round, even on cold wintry days in November and December. He has a funny way of repeating little bits of his song three times, as if he were especially fond of them.

He will shout loudly, "Did he do it, did he do it, did he do it?" Then he will politely invite you to "a cup of tea, a cup of tea, a cup of tea!" There is no end to the quaint remarks he makes, and nearly everyone will tell you he says something different. The song thrush is very useful in the garden, for he eats a great many insects and snails, especially snails, which he always carries to a particular stone



Photo by F. Martin Duncan

The British redbreast is one of the commonest birds of old England, where it is found throughout the year. The male is a good singer but cannot come anywhere near competing with the song of the closely related nightingale.

to crack the shells. This stone is called the "thrush's anvil"; and one may often hear the bird tap, tap, tapping away in a quiet corner of the shrubbery as he busily pounds up his snails.

Robin Redbreast, another especial favorite with all English people, is quite different in looks from the American robin. He is only about half the size, has a lightish brown coat, and a bright red face, throat, and waistcoat. But in his ways he is just such another sprightly, friendly little fellow.

Robin Redbreast has the prettiest confid-

FEATHERED SONGSTERS OF OLD ENGLAND

ing ways. He hops round about the house, and with a little encouragement will pop in at the window, perch upon the pictures and chair backs, and sometimes help himself to something he fancies from the table. In fact, when he sees that he is welcome he makes himself quite one of the family.

House sparrows, of course, there are in plenty—far too many of them! But there are many other delightful members of the finch and sparrow tribe to be met with in the orchards, lanes, and thickets. The chaffinch and the bullfinch are two of the smartest and most popular of these bright little birds.

The chaffinch is a genuine dandy in his chestnut-colored coat, bright pinkish-red waistcoat, and jaunty blue-gray cap. His wings are black with white bars across them that show very distinctly as he flits up and down the hedgerow calling gayly, "Spink! spink! spink!" He has a sweet little warbling song as well, made up of many little runs and trills which he sings most loudly and persistently just before rain. So country folk often call him the "wetbird."

The bullfinch, too, is a handsome fellow. His coat is gray; his cheeks, throat, and waistcoat are bright pink; he wears a smart black cap on his head; and has some black and white feathers on his wings and tail.

Master Bully loves orchards, and it must be confessed that the sturdy little rascal is rather too fond of pecking the cherries and the young buds of other fruit trees. But he eats a great many weed seeds as well; so in that way he pays for his pilfering habits.

He has a sweet, low, piping song; and he can be taught, too, to whistle a tune; so young bullfinches are sometimes caught and trained to whistle. But to all

who love birds it is far more delightful to hear little Bully piping merrily as he swings on a spray in the sunshine, happy and free, than to listen to his whistling when he is shut up in a cage, however clever the performance may be.

The greenfinch, too, is fond of orchards.

The pretty little green and yellow bird is often to be seen in the springtime sitting up in a tree or on top of a hedge drawing out his queer little song as if he were very much bored with everything.

On the commons and by the wayside goldfinches flit about and swing on the thistle heads, just as they do in America. The pretty little bird with a crimson flush on his breast and

head, sings his sweet, trilling ditty among the brambles and wild roses, while from the top of a furze bush the yellow-hammer plaintively asks for "a-very-very-little-bit-of-bread-and-no! chee-c-sc." He is a smart little bird dressed in the brown and yellow colors of the gorse bush. All through spring and summer—even quite late in the summer when most other birds have ceased to sing—the yellow-hammer sits on the commons or the hedgerows by the dusty roadside and demands bread and no cheese with unwearying persistence. He really is a patient and persevering bird.

There are no end of charming song birds to be met with in "England's green and pleasant land" all on a summer's day. From a wheatfield the skylark, the champion singer of the lark family, springs from the



Photos by F. Martin and
Olivier, P.E.

In winter, when most birds are silent, dauntless Robin Redbreast, above, keeps up his singing. He is one of the best-loved of English birds. Below is the chaffinch, a charming bird whose nest may be found during April in the trees of the English fields and waysides. He is a hardy little fellow, and spends the winter near his summer home.



FEATHERED SONGSTERS OF OLD ENGLAND

ground and fills the air with a flood of joyous melody as he mounts up and up until he is almost lost to sight in the deep blue of the sky. In the pine woods or among the ever-green trees of the shrubbery, the wee gold-crest—or golden-crested wren—pops about up at the top of the trees, uttering a sharp, shrill little cry that reminds you of the chirping of a grasshopper. The gold-crest is the smallest of British birds. It is one of the warblers, and almost exactly like the golden-crowned kinglet of North America. Indeed, except that the gold-crest is just a little bit the smaller of the two, there is hardly a pin-feather to choose between them.

The Restless Little Gold-Crest

The gold-crest is just as restless and active as a tit and is often to be seen flitting about the woods in company with tree creepers and titmice.

There are several charming little titmice who make their homes in the woodlands and orchards of Old

This is a fairly large family of blue tits, but sometimes a single family will contain more than a dozen. The parents must be kept extremely busy providing food for so many hungry mouths and growing appetites.

England. Chief favorite is the wee blue tit, who in ways and manners is almost exactly like his black-capped cousin, the chickadee. He is just the same excited, happy-go-lucky little fellow, always whisking about from one place to another, light as a ball of thistle-down. Now he swings upside down on a bramble spray, briskly picking off the tiny insects from the flower buds. Now he sits on a twig holding a hard-coated seed under his tiny claw while he hammers away at it with his beak. Now he clambers up and down the apple trees hunting for caterpillars and crying "tit! tit! tit!" to the female blue-cap and maybe to five or six young tits, who follow their parents round in the sunny orchard as soon as they leave the nest.

Blue tits are the prettiest of little birds. They are dressed in feathery suits of green and yellow, with touches of white on the wings; and on their heads they wear flat, bright blue caps.

Quite as pretty and charming are the long-tailed tits. They look bigger than the "blue-caps," but that is because they have such extraordinarily long tails—almost twice as long as the birds' wee bodies. They are almost always to be found in the woods, particularly larch and birch woods, where they flit about up and down the glades in little family parties. Father, mother, and a dozen or more little long-tails go gaily skimming through the trees one behind the other, bobbing up and down in the air with their tails standing stiffly out behind them, and giving little piping cries of excitement the while. The whole party keep together all through the summer, autumn, and winter, and do not part company until the

following spring, when the young ones go their separate ways to choose their mates and start nest building.

These tiny birds make the most beautiful, covered-in nest. It is about as big as a coconut, and is made of green moss and wool, fitted together and bound round about with cobwebs. Inside, it is lined with feathers—more than two thousand were found in one nest—and outside, the walls are decorated with greenish-gray lichen from the tree trunks, bits of ruddy-brown leaves, and here and there a fluffy white feather.

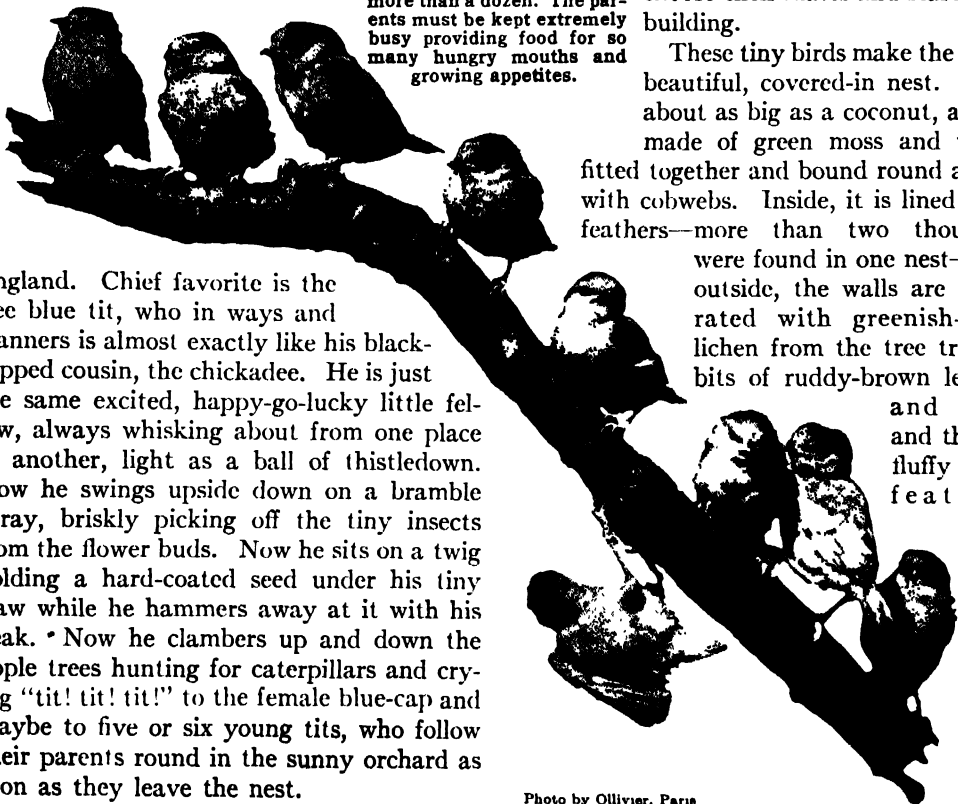


Photo by Ollivier, Paris

FEATHERED SONGSTERS OF OLD ENGLAND

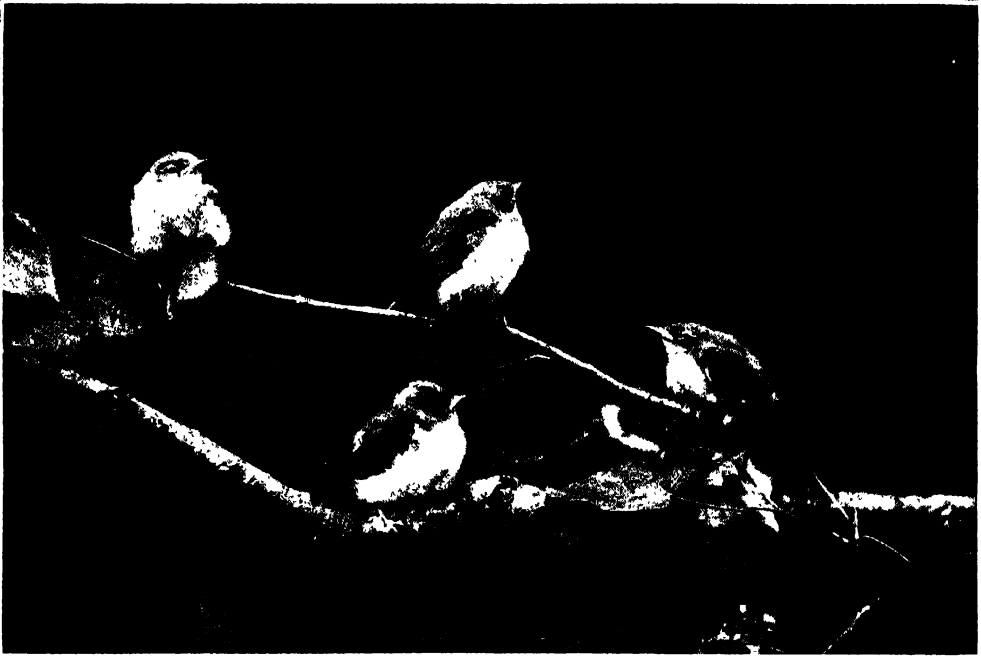


Photo by Ollivier, Paris

Willow warblers form one of the most abundant species in the British Isles. Do not confuse them

with our own warblers, which belong to another family, known as the wood warblers.

The nest is fixed in a tall thorn bush, a furze bush, or sometimes in the fork of a tree; and it has a hole in one side through which the father and mother can pop in and out.

There are wood pigeons in the woods who coo softly through the live-long summer days, "Take two cows, Taffy, take!" And there are blue jays, whose harsh, rasping cries ring through the woodland trees.

The English jay is not so blue as his cousin in America. He has a pale fawn coat, black and white tail, and some bright blue feathers barred with black in his wings. He is just as bold and domineering in his ways, however, and not at all a favorite among his feathered neighbors in the woods.

The woodpecker family is represented by the green woodpecker and the spotted wood-

pecker, great and small. The green woodpecker, the best-known of the three, is a fine bird about the same size as a flicker.

He has a dull greenish coat, a black face, a crimson crown and a pair of crimson moustaches. Country folk call him the "yaffle" because of his loud laughing cry, which runs joyously through the woods as he darts from one tree to another. All the woodpeckers spend much of their time tapping and hammering on the trees with their strong "pickaxe" bills. And in the springtime the "great spotted woodpecker" raps away at such a rate that the strokes of his bill make a single, continuous sound—like the roll of a drum.

Early in April the cuckoo joins the bird company in the green woods, and loudly announces his arrival from Africa by shout-

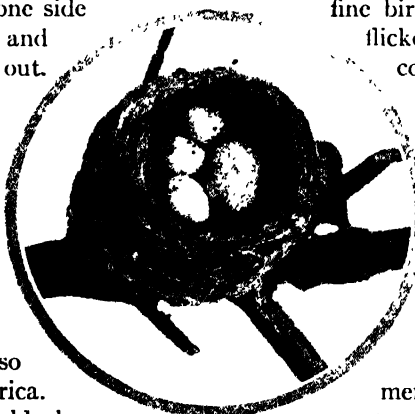


Photo by H. E. Zimmerman

That large egg will hatch out into a bold, aggressive cuckoo much larger than its nest mates. The rightful children of the home certainly deserve our sympathy!

FEATHERED SONGSTERS OF OLD ENGLAND

ing, "Cook-oo! Cook-oo!" at the top of his voice. Till May is out he keeps up his strange monotonous cry from morning till night, till everyone is quite tired of hearing it. By this time his voice has cracked, and a hoarse "cuk-cuk-oo" is all he can say.

European cuckoos are big grayish-brown birds with barred breasts, and they look so much like hawks that when they come out in the open from the shelter of the trees, small birds will often mob them and try to drive them away, for they imagine the cuckoos are after their nestlings. The birds are innocent of this crime, but they do something almost as bad; for like the American cowbird, they lay their eggs in other birds' nests, and take no more trouble about them. Then when the young cuckoos are hatched by their foster mother, they turn all the other babies out of the nursery, so that they may have all the room and all the food for themselves.

Now a young cuckoo that has been brought up by strangers has no one to tell him that he must leave England before cold weather sets in. Yet in some wonderful way—by "instinct" as we say—he knows quite well what to do. By the time he is ready to take the journey, summer is passing, and all the old birds have already flown; so he has no one to show him the way. But the young cuckoo is not dismayed. He sets out boldly all alone, or with other young cuckoos, to cross the sea, and lands safe and sound on African shores.

Down by the stream the little reed warbler has slung her pretty little nest in the middle of a thick clump of reeds, while her small partner warbles his silvery lay from the top of a tall stem close by. The willow wren—or "Peggy Whitethroat," as she is often called—is busy feeding her babies, who sit

in a row on a twig, their yellow beaks all agape for the titbits mother keeps popping in. The water wagtail, a handsome black and white bird with a very long tail, is busy hunting for insects. He is a most amusing bird to watch. Now he steps about sedately, now he takes sudden quick runs, stops again, then springs in the air after a gnat. And all the time his tail keeps wagging and his head bobs up and down in a funny way that makes him look like a mechanical toy.

There are coots and moorhens paddling in the water and running about on the banks, just as they do in the New World; lapwings, rails, and wild ducks are on the marshes; and any number of familiar shore birds run about on the shores.

Except in the Scottish Highlands eagles are rare visitors in Great Britain, but hawks and falcons of several kinds hunt the small birds and beasts in the daytime, and the barn owl and the brown owl take up the chase at night. The sparrow hawk, one of the commonest birds of prey in England, is not at all like his namesake in America. He is a bigger bird, with reddish-brown plumage and a barred breast, and he is a terror to small birds of every kind. In appearance and actions he is much like our sharp-shinned hawk.

These are just a few of the more familiar birds of England, some of those that you would be most likely to see if you paid a visit to that green land. There are many more, of course, all charming or interesting in one way or another. But we have no more time to give to them now. We must put on our magic traveling cloaks and speed away to other lands, to make the acquaintance of some of the most beautiful and curious inhabitants of the feathered world. We shall find them in amazing variety.



The STORY of BIRDS

Reading Unit No. 20

GAILY-CLAD BIRDS OF WARMER CLIMES

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

How tropical birds differ from ours, 4-177
Humming birds, 4-177-78
Chatterers and bell birds, 4-178-79
Birds that dance, 4-179-80

Sunbirds and flower peckers, 4-180-82
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Things to Think About

Why are humming birds known as "dancing gems"?
Why must humming birds get food on the wing?
How large are a humming bird's

eggs and nest?
Why do some birds dance?
Why are some birds called "sociable"?

Picture Hunt

What does the frogmouth eat? 4-177
Why do humming birds have long beaks? 4-178
What bird has a nest like that of the crested cassique? 4-26,

181
Why are weaver birds called "sociable"? 4-182
For what are birds of paradise famous? 4-183

Related Material

Which of our birds are colorful? See all color plates
What are the habits of the northern whippoorwill? 4-76-77

How do cowbirds court their mates? 4-89
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Leisure-time Activities

PROJECT NO. 1: Visit the bird house at a large zoo and learn to know a few of the tropical birds. Color plate opp. p. 4-184

PROJECT NO. 2: Find as many pictures of tropical birds as you can.

Summary Statement

The colors of the rainbow are easily matched by the colors of tropical birds. These birds are

better known for their beauty than for their songs.

GAILY CLAD BIRDS of WARMER CLIMES

Come with Us to the Tropics and See Some of the Gorgeous Feathered Folk That Live in Garden or Jungle

IT SEEMS to be in the lands where the sun is always high and hot that Nature has tried some of her most startling experiments in animal life. The creatures of the Temperate Zones go clad, for the most part, in sober fur and feathers that serve very well indeed among the cool greens and quiet browns that make up their surroundings. For startling effects we must travel toward the Equator.

So it is in hot tropical countries that we shall find the most brilliantly colored, as well as some of the strangest, birds of all. There live the lovely humming birds, natives of South and Central America. One or two, as you know, find their way up into the the United States, but none are ever found living on the other side of the Atlantic, in the Old World. There are at least five hundred different species of these beautiful "dancing gems"—as the humming birds have been called—and well do they deserve this pretty name; for all the rich colors of the most precious jewels, ruby, emerald, sapphire, topaz, gleam and glitter on their tiny bodies. Sometimes the entire

plumage of the tiny birds sparkles with changing hues as if they were clad in fragments of the rainbow. Sometimes the glistening colors flash from the throats, breasts,

backs, and crowns of the tiny sprites; or shine from crests upon their heads, frills round their necks, or fan-shaped tufts on the ends of their long tail feathers.

For, small as they are, humming birds are by no means all alike. Many are adorned with the quaint ruffs and tufts of feathers; others have pointed feathery beards on their chins, or puffs of feathery down round the knees of their absurdly tiny legs; and their tails may be short or extraordinarily long, and of all sorts of fantastic shapes.

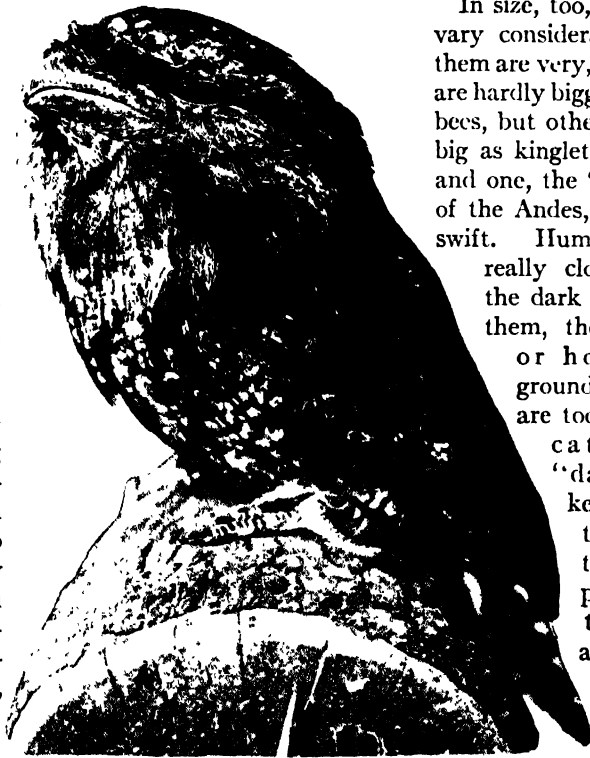
In size, too, humming birds vary considerably. Most of them are very, very tiny; some are hardly bigger than bumblebees, but others are nearly as big as kinglets or chickadees, and one, the "great hummer" of the Andes, is as large as a swift. Humming birds are really closely related to the dark swifts; and, like them, they cannot walk or hop about the ground, for their feet are too small and delicate. So these "dancing gems" keep to the air and the flowers and the trees, their pretty wings fluttering rapidly and humming like fairy tops as the little birds dart here and there and poise above

the gorgeous tropical flowers.

Most of these fairylike creatures love air, warmth, and sunshine, and spend their days flitting from flower to flower, sipping the

This sleepy fellow is the tawny-shouldered frogmouth of Australia. He sleeps during the day, and when dusk approaches starts out to hunt his insect food. He is related to the nighthawk and whippoorwill of the United States.

Photo by N. Y. Zoological Society



GAILY CLAD BIRDS OF WARMER CLIMES

nectar with their long, delicate bills. But the "hermit hummers" of Brazil are quite different in their ways from almost all others of their kind. They are dull-colored birds, with hardly a spot of metallic luster to brighten their feathers; indeed, some have none at all. They live in dark, gloomy forests where, instead of sipping honey, they feed entirely on the insects which swarm on the leaves of the trees. There are, too, humming birds who have forsaken the hot, flowery lowlands to live high up on the slope of the mountains whose

ments. The most gaudily attired of them all is the "cock of the rock," a bird about as big as a pigeon, with flaming orange-red feathers on his head, shoulders, breast, and legs and on his head a large flat, helmet-shaped crest of the same brilliant hue.

These curious birds have a remarkable kind of war dance, which they perform with much

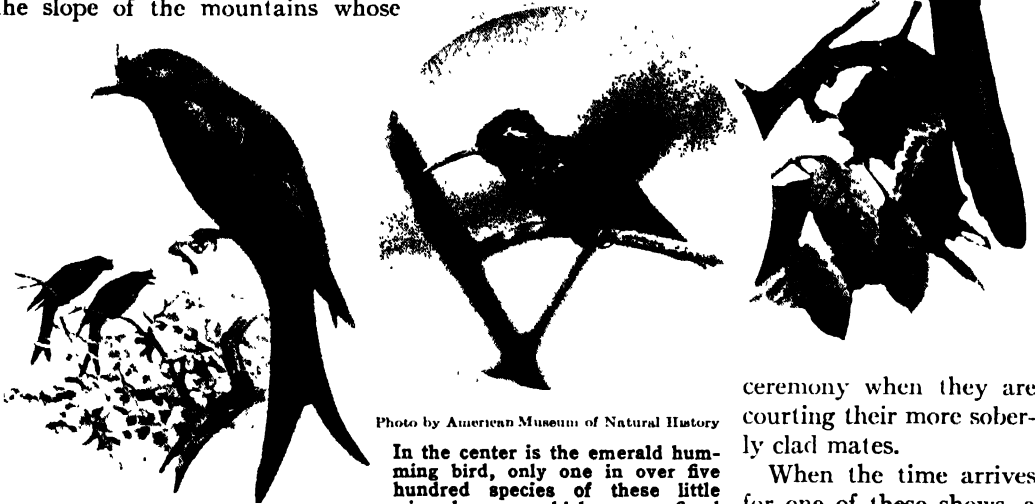


Photo by American Museum of Natural History

In the center is the emerald humming bird, only one in over five hundred species of these little winged gems, which are confined mostly to the American Tropics. At the left is the fork-tailed drongo of the island of Madagascar. At the upper right is a cona, also of Madagascar.

tops are almost always covered with snow.

Humming birds make the prettiest of little nests out of soft, cottony down all bound about with gossamer and decorated with tiny scraps of leaf and lichen. Most of the wee nests are cup-shaped, about the size of an egg cup, though some are no bigger than the tip of the thumb of a big glove. Others, looking like purses or fairy hammocks, are slung to the twigs of trees, to the tips of large leaves, or to the side of a cliff by means of spiders' webs. Two white eggs about the size of small peas are laid in these tiny nests, but they are quite big enough for the wee mother birds to cover and hatch successfully.

The American chatterers are another interesting family of tropical birds. There are over a hundred of them—some clad in the most gorgeous of colored feathers, others wearing extraordinary crests and orna-

ceremony when they are courting their more soberly clad mates.

When the time arrives for one of these shows, a number of birds, both cocks and hens, assemble together in an open space in the forest—where the

birds make their homes. The hens stand round about the dancing floor and act as audience, while one at a time the gaily clad cocks advance to the center of the ring and hop and skip about with outstretched wings and swaying head until they are tired out. This dancing exhibition goes on for a very long time, as a rule; for as soon as one performer is exhausted he retires and another one at once steps up to show the admiring hens what *he* can do. Perhaps the best dancers have the right to be the first to choose their mates. Anyhow, at the end of the ceremony most of the cocks go off in triumph, each with the lady of his choice, and each happy pair soon settles down to make a nest of mud and moss on the face of a cliff in which to rear a family.

GAILY CLAD BIRDS OF WARMER CLIMES



Photo by American Museum of Natural History

The honey creepers live in the American Tropics. They are all very small and brightly colored. Their

food consists of tiny insects which they capture in flowers with their long tongues.

Just as remarkable are the bell birds, who have gained their name from their curious call note, which sounds like a tolling bell or the ringing of a blacksmith's hammer on an anvil, and can be heard three miles away.

The male bird of one species has snow-white plumage and a brilliantly colored face, while rising from the forehead is an extraordinary spiral wattle nearly three inches long. This is really a hollow tube, which the bird inflates when excited. It then stands erect upon his head like a slender spine, but in the ordinary way it hangs down like a turkey's wattle. Another of these bell birds is chestnut-colored, with a white head and throat; and it has no less than three of these peculiar wattles.

Another odd chatterer is the umbrella bird, who is clothed in feathers of the deepest black and has a large flat spreading crest on top of his head. This is the bird's "umbrella." In addition he is the proud possessor of a long black feathery wattle which reaches almost down to his feet.

All the chatterers live in the for-

ests and feed upon fruit and seeds. So, too, do the manakins, which are much smaller birds and for the most part beautifully colored. Some of the manakins have some curiously twisted quill feathers with very thick shafts; with these the birds make a sharp sound, like the crack of a whip, when they clap their wings together.

One species of the manakin family is called the "dancer" on account of the fantastic way in which the male birds disport themselves when they are feeling happy and excited. Usually two birds will join in the dance, each one sitting on a leafless twig about a foot away from the other. There they jump up and down, springing two feet or so into the air and coming down on exactly the same spot on their twig as regularly as if they were wound-up mechanical toys. They accompany themselves meanwhile by singing "to-le-do, to-le-do!" Over and over

The orange-colored "cock of the rock" is found along the streams of South America. His brilliant coloring and large size make him quite startling to see.

Photo by N. Y. Zoological Society



GAILY CLAD BIRDS OF WARMER CLIMES

again the funny birds sing the queer little tune, keeping time perfectly as they dance. It goes like this: at "to" they crouch down on the twig; at "le" they spring high in the air; at "do" they drop back on the twig again.

Beautiful Birds of Tropical America

Some of the manakins are dressed in black, with bright blue cloaks and crimson crests; others are black with orange-colored cheeks, waistcoats, and collars; still others go gaily dressed in green, yellow, and black.

Among other beautiful birds of tropical America are the well-known tanagers. The scarlet tanager and one or two other members of the family spend summer in the United States, but most of these delightful little singing birds keep to the hotter regions of Central and South America. One of the most lovely of all is the white-capped tanager, which is a beautiful cornflower blue, with a silvery white cap with one deep crimson spot, like a ruby, in the center of the forehead.

At the other side of the world, in the tropical regions of Africa, India, and the East Indies, there are any number of wonderful birds. Here gorgeous little sunbirds and flower peckers take the place of the American humming birds. Sunbirds are genuine "sun worshipers"; they revel in the burning rays of the fierce noonday sun. Through all the hottest parts of Africa, India, and Australia these lovely, graceful, little sunshine fairies flit about the trees in forest groves, gardens, and in the open country. They usually go about in pairs, and are most restless, graceful little creatures, reminding

one of blue tits and chickadees in the way they climb about and swing "any-way-up" to the twigs and sprays. They have long, slender, curved bills, and feed, as humming birds do, on honey and the tiny insects that cluster about the flowers. But they do not

hover before the flowers as humming birds do.

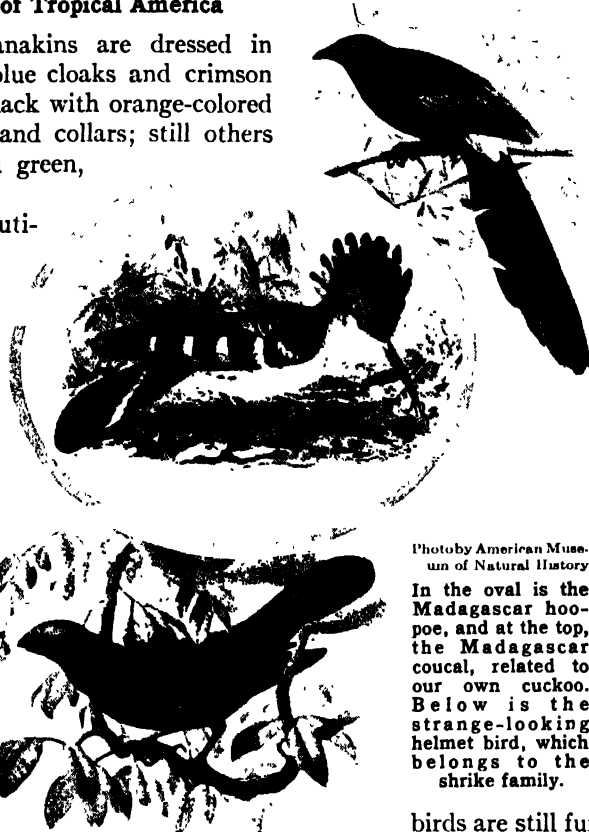
As for the colors of these fascinating wee sunbirds, it is impossible to give you a complete picture of their varying beauty. Some are purple, others lilac or blue, copper, orange, or red, with gleaming metallic patches here and there. Some have snowy breasts, others have gaudy striped waistcoats of scarlet and lilac, crimson and white, or orange and white. The backs, sides, and breasts of many of the tiny

birds are still further adorned with downy feathers and fluffy tufts.

The flower peckers are natives of India and Australia. Like the sunbirds they are sprightly, restless little beings, spending their days flitting about from one tree or bush to another in open forest glades and gardens. They love water. Small flocks of these gaily clad little birds are often to be seen hopping briskly about the tops of tall trees by the side of a stream—meanwhile giving voice to low, sweet warbles of pleasure and contentment.

The Lovely Plumage of the Diamond Bird

Like the sunbirds the flower peckers are clad in many colors. They are all bright and pretty, but the loveliest of all is the



Photoby American Museum of Natural History

In the oval is the Madagascar hoopoe, and at the top, the Madagascar coucal, related to our own cuckoo. Below is the strange-looking helmet bird, which belongs to the shrike family.

GAILY CLAD BIRDS OF WARMER CLIMES



Photo by American Museum of Natural History

Crested cassiques are found in the forests of South America. They are closely related to the starlings of the Old World, one of which has been introduced into the United States, where it is now widely distributed.

You may be sure that when the wind blows, baby cassiques are going to swing back and forth like the pendulum on a clock. Let us hope that the nests are well made and securely fastened to the tree.

GAILY CLAD BIRDS OF WARMER CLIMES

diamond bird, whose pale gray plumage is splashed all over with spots of white, orange, yellow, scarlet, and black, while its wing feathers are a rich dark red, or have bright red or yellow tips.

Both sunbirds and flower birds make the daintiest of little nests, which they sling by a network of cobwebs from leaves, twigs, or the tips of slender branches. Sunbirds use grass, moss, feathers, and hair in the making, and usually build a tiny porch over the entrance. Flower peckers choose white, cottony material for their babies' cradles, and decorate the outside with scraps of moss and grass leaves.

But the most remarkable nest builders among the small singing birds of the Old World are the weaver birds and the tailor birds.

The weaver birds—there are many of them—include the lovely little red-beaked waxbills, the pretty Java sparrows, and the strange long-tailed widow bird, who lives in South Africa and has such an exceedingly long tail that he has great difficulty in flying.

Most weavers construct large, solid nurseries for their babies out of grasses, twigs, rootlets, and strips of bark, all firmly woven together. Some of the nests are flask-shaped; some have spouts projecting from them, through which the birds pass in and out; others are large and round and are suspended from a branch by a thick rope of coarse fiber. But most curious of all are the "sociable weavers" of Africa. As many as two or three hundred of these

clever little weavers, who are smartly dressed in brown, buff, black, and white, will join all their nests together under one roof. The roof, which they all help to weave,

is built among the branches of a large acacia tree and is made of bushman's grass. Cartloads of grass are often used to fashion this wonderful contrivance, which, when finished, looks like a gigantic mushroom or the roof of a native hut stuck up in the boughs of the tree. Under the roof each pair of weaver birds builds its own separate nest, and there they all live and bring up their children side by side in the most neighborly fashion, completely sheltered from rainstorms and the heat of the sun.

Now the tailor bird is a worker of quite a different character. With its sharp-pointed, slender beak as a needle, and spiders' threads, caterpillars' silk, or cotton fiber from the plants as thread, the clever little bird sews leaves together to make a firm foundation for its nest. All the little "tailors" work in the same way. First they pierce the edges of the leaves with their "needles" and then skillfully draw the sewing thread through the holes, lacing the leaves together. Some tailor birds use two broad leaves, others use three or four narrow ones to form the pocket which contains the little cup-shaped nest of finest cotton wool and a few horsehairs. Some of the birds are the neatest of seamstresses, but others are careless workers and do not seem to mind what sort of stitches they



Photos by American Museum of Natural History and N. Y. Zoological Society

The African weaver birds are very sociable in their habits. In the tree above they have constructed a roomy apartment house, where large numbers of them will live in peace and harmony. The nests are connected by tunnels made of sticks, and the eggs are well hidden along these dark passages, where no enemy can do very much damage. Below is one of the builders of these nests.



GAILY CLAD BIRDS OF WARMER CLIMES

take, so long as the leaves hold together.

These smart little tailor birds live in India, Burma, and China, where they are seen hopping about in the gardens, orchards, and hedgerows hunting for small insects on the trees and bushes. They are pretty little wrenlike birds, with turned-up tails, and are dressed in soft green and brown feathers and dark red caps.

The Mysterious Bird of Paradise

Among all the wonderful birds of the Old World it is difficult to say which are the most lovely of all, but probably most people would award the prize for beauty to the "birds of paradise." Few of us are fortunate enough to see these birds at home in their native haunts, for they are found only in the wild, mountainous parts of New Guinea and a few neighboring tropical islands.

For a long time the birds of paradise were surrounded with mystery. People believed that they lived always hovering in the air, turning themselves about to face the sun and never descending to earth except to die. This, of course, was absurd. Birds of paradise perch and roost in trees like ordinary birds. The fable arose from the fact that the natives always cut off the legs of the birds before sending their beautiful skins to Europe; and so, since no one had ever seen them alive, people thought the birds of paradise were legless!

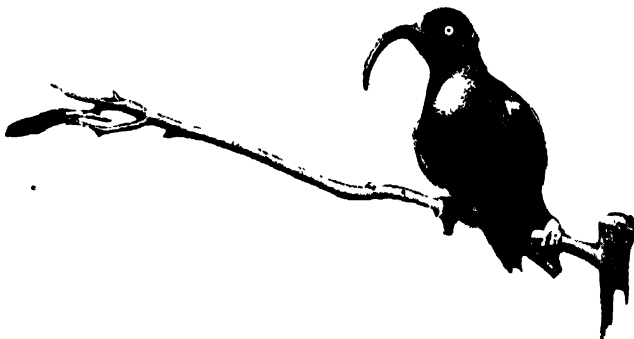
These birds are closely related to the crow tribe. But anything more unlike a somber black crow than a gorgeous bird of paradise it would be hard to find. There are, so far as is known, fifteen different

kinds, some as large as crows, others about the size of a wood thrush; but one and all, with their dazzling coloring and their astonishing array of plumes and streamers, are truly wonderful to behold. The heads and throats of the birds are clothed with feathers so short and thick as to appear like velvet; these gleam with metallic luster. Deep violet, emerald green, yellow, and rich coffee-color are the prevailing shades in the plumage of the birds, while from beneath the wings fall a shower of fine waving orange plumes, sometimes two feet long. These plumes can be raised in such a way that the birds are surrounded with them, and look as if they were in the midst of a cascade of glittering feathers—through which glimpses of all their wonderful colors can be seen.

The Dancing Parties at Courting Time

In the springtime, when their plumage is most splendid, the birds of paradise give "dancing parties." A dozen or more gather together on the topmost boughs of a tall, spreading tree. There they spring up and down, wings outstretched, glittering plumes waving, and dart about, crossing and recrossing one another in a kind of wild, mazy dance—each one trying to outdo the rest in grace and agility.

All this "showing off" is done for the benefit of the hen birds of paradise, who have no fine gleaming feathers to boast of but are quite ordinary-looking birds. They do not join in the dance, but perch round about in the trees admiring the antics of their magnificent mates—apparently quite content to act as spectators.



This bird with the strange bill is a bird of paradise from New Guinea. It is not so gorgeous to behold as are certain other members of its family, but its coloring is very magnificent, nevertheless. Most varieties of the bird of paradise do not have a long bill.

Photo by N. Y. Zoological Society

The STORY of BIRDS

Reading Unit

No. 21

SOME OF THE STRANGEST BIRDS IN THE WORLD

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

Birds that build "summer homes," 4-185-86
The lyre bird, 4-186-87
Pheasants and peacocks, 4-187-89

Many kinds of parrots, 4-188-92
The toucans, 4-194-96
Pelicans and shoebills, 4-196
Storks, 4-197
Flocks of flamingoes, 4-198

Things to Think About

Why do bower birds build decorated bowers?
How does the lyre bird keep his tail feathers from being torn?
Where did our ring-necked pheasants come from?

How does a pheasant conduct his courtship?
How do parrots use their hooked beaks?
How are storks treated in Holland?

Picture Hunt

How does a baby pelican get its dinner? 4-185
Which is the largest song bird? 4-187
Why is the breeding of pheasants popular? 4-189
What part of a peacock is the

large "fan"? 4-191
How is the female hornbill saved from enemies while nesting? 4-193-94
How are baby flamingoes saved from drowning? 4-197

Related Material

What is a lyre? 12-205
How does the ruffed grouse court

his mate? 4-77

Summary Statement

Birds of foreign countries fascinate us by their strange court-

ships, interesting family life, and ways of getting food.



Water Paintings Supplied by the National Association of Audubon Societies

These brilliant birds will never be found living in northern climes, unless it be inside a zoo. Some of them you will recognize, perhaps, but others you may not know. They are: 1. Swainson's lorikeet. 2. The broad-billed flycatcher of New Guinea. 3.

Pennant's parakeet. 4. The crimson-breasted barbet. 5. The saddle-billed stork, a relative of the solemn white stork that nests in northern lands. 6. The red chatterer. 7. The beautiful lorikeet. 8. The African wood ibis, of delicate hue.



After Paintings Supplied by the National Association of Audubon Societies

Nature has used some strange designs in fashioning most of the birds on this page—and those that are not strange in form are bright of hue. They are: 1. The cream-raquet-tailed kingfisher. 2. The pink-crested bee eater, one of a family of bright-colored

Old World birds that live on insects and fly much as the swallow does. 3. The red and blue macaw. 4. The rufous-necked hornbill. 5. The double-collared sunbill, who lives in Africa. 6. The horned parakeet. 7. The strange red-billed toucan.

SOME OF THE STRANGEST BIRDS IN THE WORLD



Photo by Ameri

Natural History

The strange, big-billed birds above are white pelicans. Their nests are placed on piles of reeds on these low islands in Klamath Lake, in California. The young

are fed on fish which have been partially digested and then disgorged by the parent. You can see one youngster dining.

SOME *of the* STRANGEST BIRDS *in the* WORLD

We Must Go to Far-off Australia or New Guinea to Find the Curious Bower Bird That Loves to Plant a Garden, and to Africa to Find the Queer Hornbill

THE countries that lie under or near the Equator are the ones that have the strangest, as well, as the most brilliantly colored birds in the world. As we have already seen, the jungles of Africa and South America are bright with gorgeous plumage. But they are not the only places that can boast of their magnificent feathered citizens.

Many of the bower birds of Australia and New Guinea are bright, beautiful birds, too. They are about the size of small crows, with pretty-colored plumage and sometimes fine crests; but they do not possess the wonderful feathery cascades of the gorgeous birds of paradise.

It is for their curious customs rather than their lovely plumage that the bower birds

are celebrated. In the springtime every bird, or pair of birds, builds a "bower"—not to serve as a nest for their eggs or a nursery for their babies, but as a kind of summer-house of their very own where they can play about and enjoy themselves. It seems to serve the same purpose as the summer cabins we build by a river or in the woods as a place in which to amuse ourselves in the holidays.

The bowers are usually built up of sticks, grasses, or moss. Some are genuine wigwams; others are like long covered runs, three feet high or thereabout, and seven or eight inches wide. These give the birds plenty of room to run about in. Others are quite small, just big enough for two birds to snuggle up together in. But whether they

SOME OF THE STRANGEST BIRDS IN THE WORLD

are large or small, the birds almost always make a garden or playground around their bowers. The ground in front is carefully cleared, and the little owners of the estate collect bright leaves, berries, seed pods, bones bleached white by the sun, pretty feathers, pebbles, small shells, and, if they can find any, bits of colored glass. These odds and ends are strewn about all over the bower and the playground.

And there the birds spend many happy days, playing and chasing one another about and even dancing with glee! Sometimes the cock bird will seize a bright feather or a leaf in his beak and rush to show it to his mate; and the pair are constantly arranging and rearranging all their treasures, which appear to give them the greatest delight.

The most wonderful bower of all is made by the gardener bower bird, who lives in the tropical forests of New Guinea. He erects a most delightful little arbor of moss and twigs at the foot of a shrub or small tree. It is about two feet high and three feet wide, and has a sloping roof covered with the slender stems of a tree orchid and decorated with bunches of moss.

But this is not all. In front of the open doorway of the arbor stretches a lawn of softest, greenest moss strewn with brightly colored flowers and berries, all of which have been collected and planted in place by the clever little gardener. He takes the greatest pride in

his garden. He carefully removes every weed and stone from his lawn, and as soon as a flower fades he carries it away, throws it on a rubbish heap at the back of the arbor, and replaces it with a fresh one.

The bower birds' nests are quite ordinary affairs made of twigs and dry leaves, not decorated in any way. The mother bird, as soon as she has laid her eggs, has no more time to play about, but her mate still slips away now and then to spend a little time alone in his beloved garden.

The lyre bird, the largest of all the song birds, is another beautiful and remarkable Australian bird. He is about the same size as a pheasant; and he makes his home in the wild bush country, in the midst of dogwood scrub and graceful tree ferns—far from the haunts of man. He is a fine bird in every way, but his chief glory is his tail, which is shaped like an ancient lyre and is made up of a number of very long delicate feathers.

When running through the scrub the lyre bird carries his tail stretched out behind to protect it from injury. But when he wishes to show himself off to the best advantage, his wonderful tail is raised and stands erect over his back like a peacock's train.

Although he is only a feeble flyer the lyre bird has very strong legs and feet and can jump up from the ground to a bough eight or ten feet above his head. He is a clever mimic, too. He can imitate not only

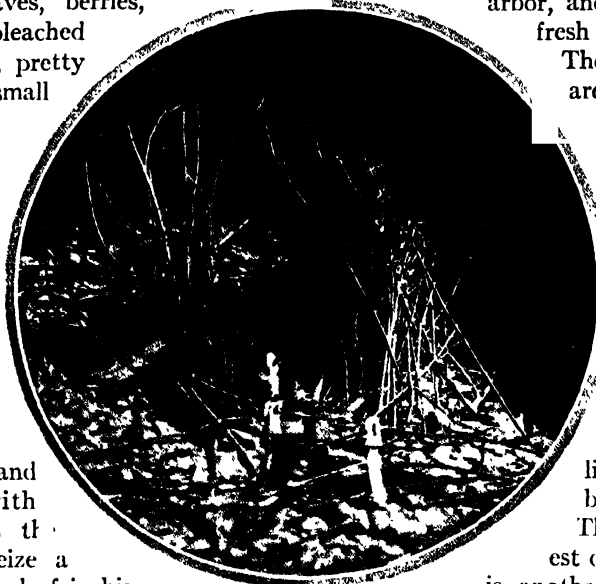


Photo by N. Y. Zoological Society
The male satin bower bird builds this little playhouse as part of his courtship performance. At the entrance he places a number of bright-colored objects, and seems to enjoy his little house a good deal. This bower has nothing to do with the nest, which is always built by the mother. Below is a fawn-breasted bower bird, one of the little creatures that delight to build these dainty playhouses.



SOME OF THE STRANGEST BIRDS IN THE WORLD

the songs of other birds but the barking of the dingo dog and the sounds made by other wild animals.

The Gay Capers of the Lyre Bird

Most of his time is spent scratching about on the ground like a pheasant, but instead of scratching for grain and seeds, he hunts for insects and snails. He has, too, a curious habit of scratching and kicking up the soil into a little hillock; on the top of this he stands, like a performer on a platform, and with drooping wings and splendid tail erect, he capers and dances, whistles and sings, and mimics all the birds and beasts he can think of. This the lyre bird does to show the lady of his choice what a clever, handsome fellow he is; and his conceited behavior is generally successful in winning her admiration. The female bird is very much like a hen pheasant, and does not have the lyre-shaped tail.

Equally fine in their way are the true pheasants. The cock birds, in their gleaming suits of green and purple, orange, gold, and gray, are the aristocrats among game birds—and well they seem to know it. They strut about in the woods or through the stubble of the fields with a most important air, their splendid long tail feathers sweeping the ground behind them like grand court trains, as if the birds imagined that the whole world belonged to them. And really the pheasants have something to be proud of, for they are truly magnificent fellows and come of a very old and distinguished bird family.

Pheasants are birds of the East. The ring-necked pheasant was brought over to America from China many years ago, and is now quite comfortably settled in his adopted country; and the common pheasant, whose native home is

in Asia Minor, was introduced into England in the same way. Splendid as these birds are, however, they cannot compare in gorgeousness with many of their Eastern cousins. Two of the most beautiful are the golden pheasant and silver pheasant of China and Tibet. The golden pheasant is a right royal bird in a crimson robe with a golden collar barred with black. The silver pheasant has glistening white wings and tail finely laced with black, and a striking black crest. Then there is the Lady Amherst pheasant, a proud and haughty bird who lives on the mountains of China and drives away his golden cousin from his own especial territory. He is clad in a livery of scarlet and metallic hues, and wears a silvery white hood barred with black and surmounted by a crimson crest.

All the pheasants indulge in most remarkable dances when they are courting their more soberly clad mates. Strangest of all is the behavior of the argus pheasant, who lives in the forests of Siam, the Malay Peninsula, and Sumatra. This bird has, in his wings, extraordinarily long quill feathers covered with brilliantly colored eyespots—some-what like the eyespots on a peacock's train. His tail feathers, too, are beautifully colored and of immense length in comparison with the size of the bird, who is about as large as a common fowl.

When he goes courting the argus pheasant struts up and down before the bird he hopes to gain as his mate, bows before her politely, and then suddenly he spreads out his wings, joining them over his back so that they look like a wonderfully painted fan covered with glittering eyespots. As he spreads his wings the pheasant draws back his neck and hides his head behind his fan;

The beautiful lyre bird of New South Wales is so called because of his marvelous tail, which looks strikingly like lyre. He has the honor of being the largest of all song birds.



Photo by American Museum of Natural History

SOME OF THE STRANGEST BIRDS IN THE WORLD

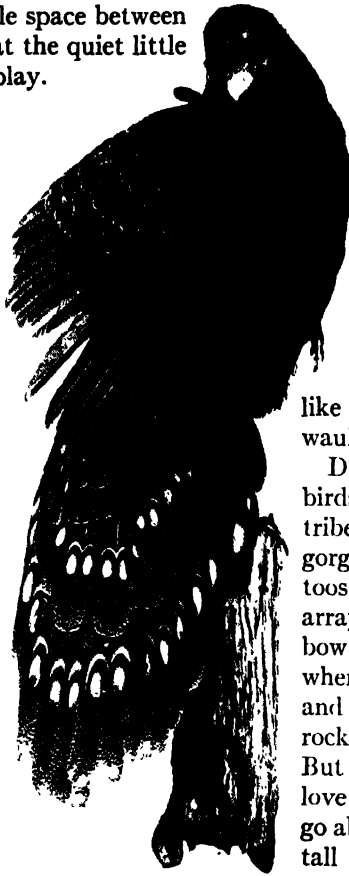
then he peeps through a little space between the wing feathers to see what the quiet little hen bird thinks of this display.

She does not think much of it as a rule. She goes on pecking about on the ground and takes no notice—or *appears* to take no notice—of her admirer's clever fan trick. And the disappointed cock pheasant lowers his wings, runs round so as to face the lady once more, and goes through the whole performance again.

The lordly peacock is treated in much the same offhand manner when he invites the homely peahen to admire the green and blue and golden glories of his wonderful feathery train. This train is not the bird's tail, as many people suppose. It is made up of the especially long and beautiful plumes covering the tail feathers; they are called the "tail coverts."

The real tail feathers are hidden beneath them and act as supports to the regal train when it is erected.

The peacock is one of the most magnificent of the pheasants, and like his near relatives is an Eastern bird. He is a native of India,



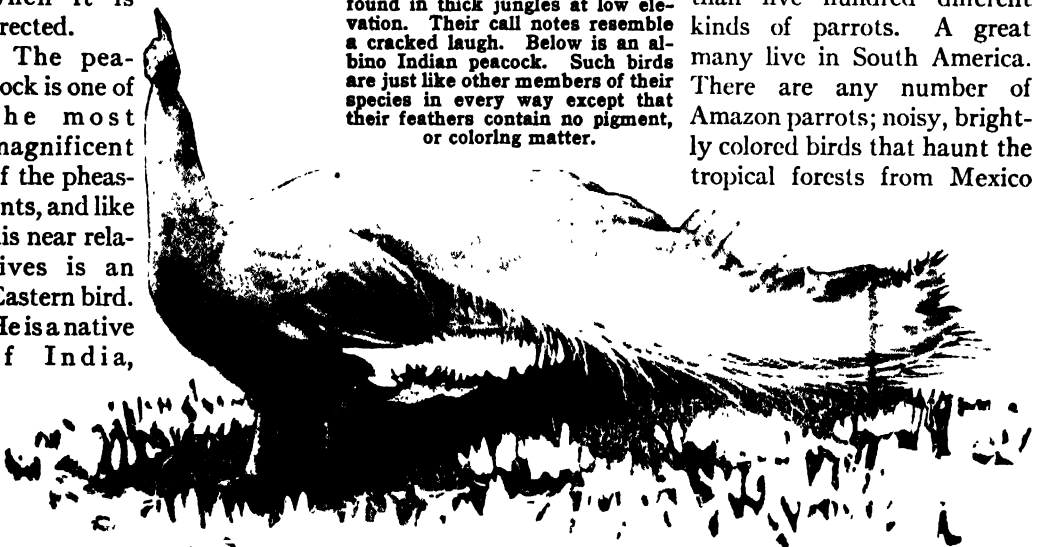
The peacock pheasant above is one of the gorgeous birds of Asia. The tail is composed of twenty-four beautiful feathers, which differ between the sexes. The birds are found in thick jungles at low elevation. Their call notes resemble a cracked laugh. Below is an albino Indian peacock. Such birds are just like other members of their species in every way except that their feathers contain no pigment, or coloring matter.

where he lives in the forests, coming out sometimes to feed in cultivated fields. Although the peacock occasionally does much damage in this way, he is seldom interfered with, for the Hindus hold the bird in deep reverence and would never think of harming him. The voice of the peacock does not at all accord with his magnificent appearance and his lovely wings. It is a shrill, discordant shriek—

like nothing so much as the caterwauling of a prowling tomcat.

Different from all other tropical birds are those belonging to the parrot tribe—the fascinating "Pollies," the gorgeous macaws, the splendid cockatoos, and the pretty little parakeets arrayed in all the colors of the rainbow! Parrots are found nearly everywhere in the warmer parts of the Old and New Worlds—over grassy plains, rocky hillsides, even on sandy flats. But most of these interesting birds love the tropical forests, where they go about in flocks, climbing about the tall trees, chattering and screaming and making a tremendous racket.

Altogether there are more than five hundred different kinds of parrots. A great many live in South America. There are any number of Amazon parrots; noisy, brightly colored birds that haunt the tropical forests from Mexico



Photos by American Museum of Natural History and N. Y. Zoological Society

SOME OF THE STRANGEST BIRDS IN THE WORLD



Photos by N. Y. Zoological Society

SOME OF THE STRANGEST BIRDS IN THE WORLD

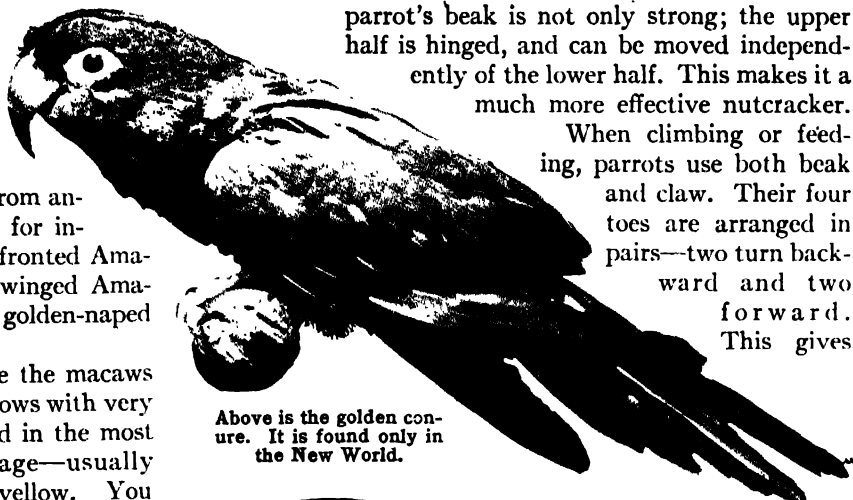
to the Argentine. They are chiefly green combined with various colors which distinguish them one from another; there are, for instance, the blue-fronted Amazon, the orange-winged Amazon, and the golden-naped Amazon.

Then there are the macaws (má-kô'), big fellows with very long tails arrayed in the most gorgeous plumage—usually red, blue, and yellow. You can always tell whereabouts in the forests the macaws are feeding from the deafening clamor they make as they climb about the trees looking for fruit and berries. Sometimes a flock of macaws leave their forest home to raid the fields of wheat and maize. It is a fine sight to see these great, gorgeous birds moving about the fields, but it must be admitted that they do a lot of damage to the crops with those big, strong beaks of theirs.

All the parrot tribe are known by their big hooked beaks, which enable them to eat hard-shelled nuts as easily as other birds eat seeds and acorns. The macaws, who have especially powerful beaks, can even crack a Brazil nut. But a

parrot's beak is not only strong; the upper half is hinged, and can be moved independently of the lower half. This makes it a much more effective nutcracker.

When climbing or feeding, parrots use both beak and claw. Their four toes are arranged in pairs—two turn backward and two forward. This gives



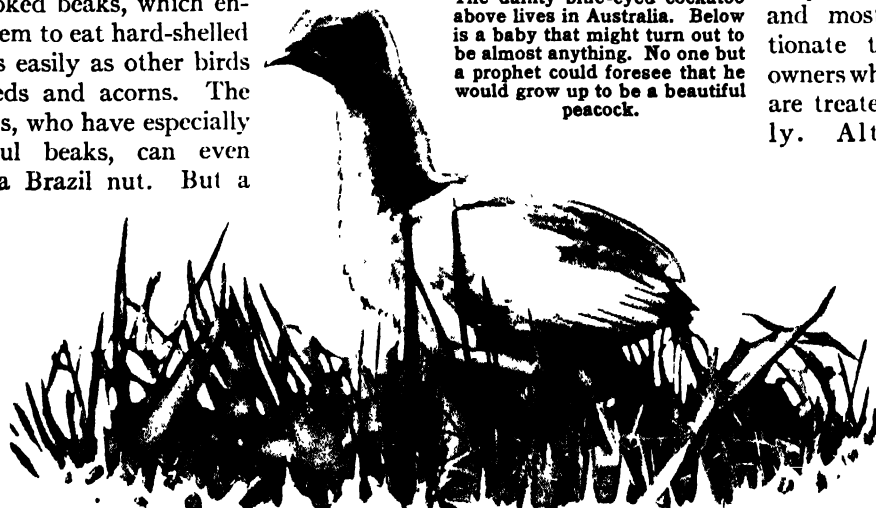
Above is the golden conure. It is found only in the New World.



them a firm grip. Their strong, hooked beak acts as an extra claw when the birds swing themselves from bough to bough up among the tree tops. When it is feeding, a parrot nearly always stands on one foot and uses the other as a hand in an almost human fashion, carefully holding the fruit or nut or whatever it is eating in its claws while it gravely nibbles at it with its beak.

Parrots make delightful pets. They are very intelligent and most affectionate to their owners when they are treated kindly. Although

The dainty blue-eyed cockatoo above lives in Australia. Below is a baby that might turn out to be almost anything. No one but a prophet could foresee that he would grow up to be a beautiful peacock.



Photos by N. Y. Zoological Society

SOME OF THE STRANGEST BIRDS IN THE WORLD

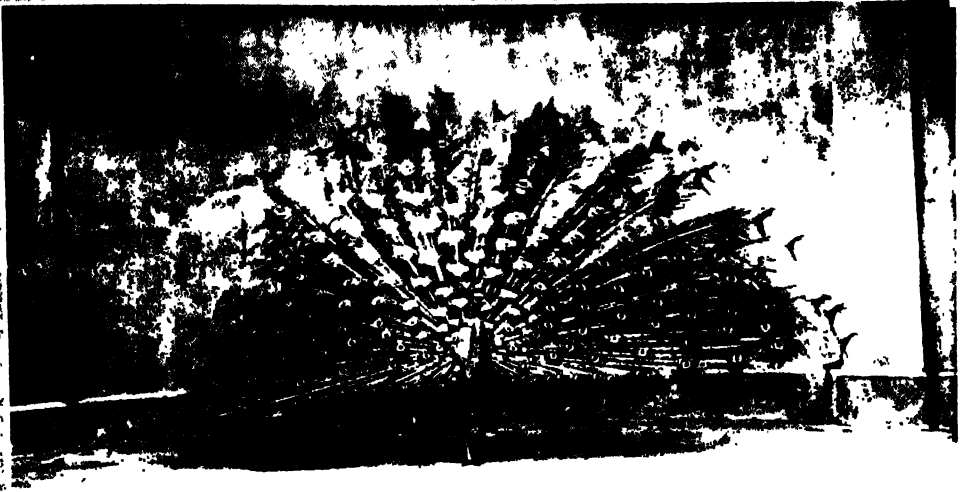


Photo by N. Y. Zoological Society

Indian peacocks have been known to man for many centuries. The Hebrews were keeping them in captivity in the days of Solomon. Alexander the Great took them home with him to Greece. From there they were carried to Rome to grace the palaces of the Caesars. Not only did the Romans use the peacock for

ornamental purposes. They used its brains and tongue for food. Naturally so rare a luxury could be found only on the tables of the emperor and his court. The peacock's tail is rather small. The large fan that you see is composed entirely of the upper tail coverts, which are not so very noticeable in most birds.

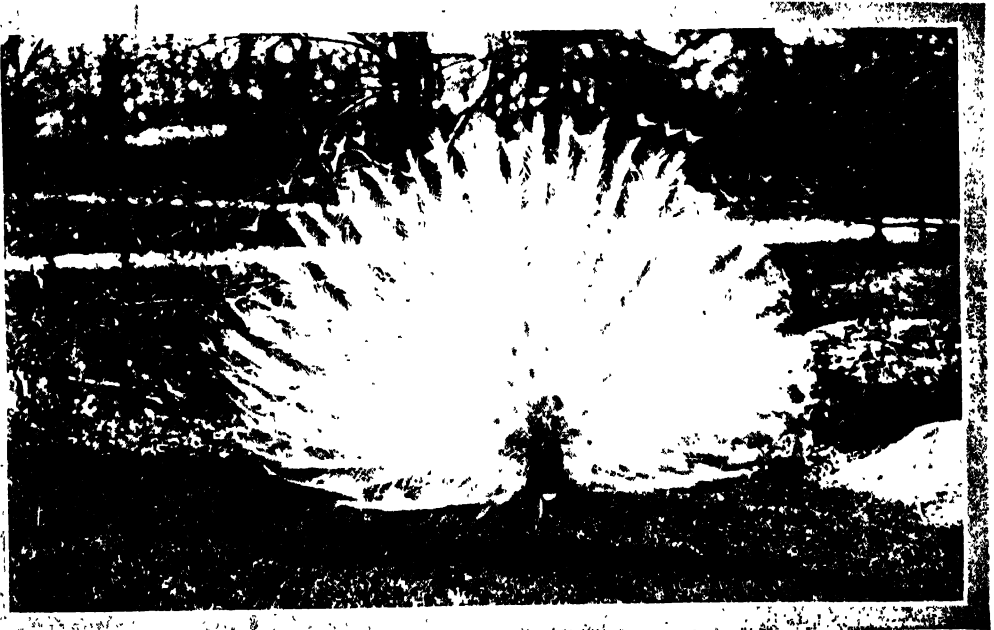


Photo by N. Y. Zoological Society

This white peacock is strutting about in elegant leisure. For six months the male wears this beautiful train, which he takes great pains not to soil. One would think he might prefer to have a less bunglesome ornament to show off. In spite of his fine appearance, the peacock's voice is very harsh and unattractive. In

the wild state he prefers to live in the jungles near watercourses. The Hindus, with a religion unlike ours, do not kill the peacock, and will not let foreigners molest him. We of the progressive West would do well to follow their example and protect our own interesting birds from needless slaughter.

SOME OF THE STRANGEST BIRDS IN THE WORLD

naturally they have harsh, unmusical voices, many of them can imitate almost any sound they hear, whistle tunes, and learn to talk in the most clever way. The African gray Pollies are the best talkers of all. They will copy the voices of different persons almost exactly, and in many cases really seem to understand what they are talking about. We know one gray parrot that always says, "Want to come out," when she wishes to come out of her cage. She says "good-by" when people leave the room, and "good night" when she is covered up for the evening. And never does she make a mistake and say "good-by" or "good night" at the wrong time.

The cockatoos, too, are clever talkers, though they are not so intelligent as gray parrots. They will repeat the same remark over and over again without rhyme or reason, and they scream most unpleasantly when annoyed or excited. So they are not always pleasant companions in a house. Cockatoos come from Australia and the East Indian islands. They are handsome birds, with fine, feathery crests which stand on end when their owners are excited. The big white cockatoo with a yellow crest is one of the best-known of the family, but there are many others often to be seen in zoölogical parks. One of the finest of them is the "great rose-crested cockatoo," while another, called Leadbeater's cockatoo, has a lovely peach-blossom tint on its head, neck, and breast, and is equally beautiful.

There are many other interesting parrots in Australia, including the delightful little love birds—or budgerigars (büj'ér-ê-gär)—

who make such amusing pets. They belong to the family of grass parakeets, who live almost entirely on grass seeds and grain, though a few of the pretty little birds eat insects and suck honey from the flowers as well.

Parrots Beautiful and Strange

There are many beautiful parakeets, too, in India and Ceylon, while in America flocks of these small, long-tailed parrots of different sizes and colors make their homes in the forest lands from Mexico and the West Indies to Bolivia and Paraguay.

Then there are the pigmy parrots, the smallest of all the parrot tribe—gorgeous little birds with short, square tails and long wings. They are a good deal smaller than an English sparrow. These pigmy parrots live in New

Guinea, while New Zealand is

the home of the extraordinary owl parrot, a large greenish bird with a face like an owl.

Strange to say the owl parrot cannot fly, though occasionally it climbs a tree, opens its wings, and sails to the ground, parachute fashion. Like the owl this curious parrot goes abroad at night. It runs about eating moss, ferns, and berries, and nibbling grass like a rabbit, and when it finds something especially nice to eat it makes a queer, grunting noise of satisfaction. The daytime it spends in holes in rocks or under the roots of trees, and sleeps so soundly that it won't wake up unless it is pulled out of its hiding place.

Lastly there are the Australian lorries or brush-tongued parrots. They are the most brilliantly colored of all the parrot tribe, and have on the tips of their tongues a most peculiar kind of "brush" with which they mop



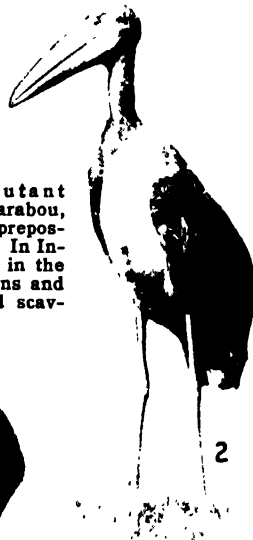
Photos by N. Y. Zoological Society

Here are a few members of the well-known group of talkers. The vocal apparatus of parrots is very different from that of man, but the birds are able to make the same sounds that man makes. At the left is the Santo Domingo parrot. In the center is the great sulphur-crested cockatoo. At the right is the yellow-shouldered Amazon parrot.

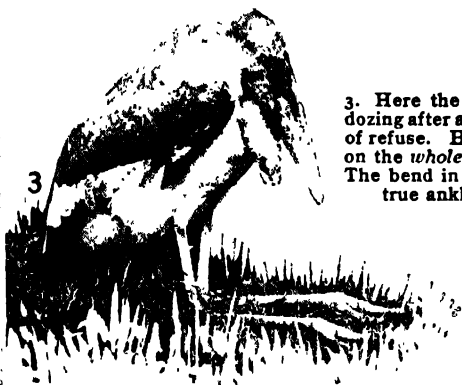
SOME OF THE STRANGEST BIRDS IN THE WORLD



1. This brown pelican is arranging his feathers after a bath. Note the large feet and pouch. With these wings he should be a good flyer.



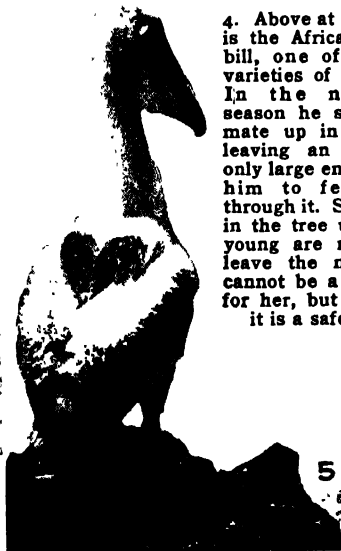
2. The adjutant storks, or marabou, are indeed unprepossessing birds. In India they feed in the streets of towns and are very good scavengers.



3. Here the adjutant is dozing after a nice dinner of refuse. He is resting on the *whole* of his foot. The bend in his leg is a true ankle joint!



4. Above at the right is the African hornbill, one of several varieties of hornbill. In the nesting season he seals his mate up in a tree, leaving an opening only large enough for him to feed her through it. She stays in the tree until the young are ready to leave the nest. It cannot be a gay life for her, but at least it is a safe one.



5. Here are three brown pelicans out for a stroll. The one in the center seems to be laughing. He is thinking how funny the other pelicans look with that large bill!



SOME OF THE STRANGEST BIRDS IN THE WORLD

up the honey from the flowers upon which they chiefly feed.

Birds' bills are very interesting. They are the birds' tools, and are always of just the right size and shape to help their owners in getting a living. No matter how extraordinary they may appear to us, there is always some good reason for their oddity. For example, there are the toucans (tōō-kān'), who live among the forest trees and mangrove swamps of tropical America. They are rather ungainly-looking birds, dressed in very startling colors; and they have enormous beaks which look exactly like absurd false noses, such as actors sometimes wear upon the stage. These beaks are just as brilliantly colored as the bird's plumage. Some are bright scarlet, others blue, green, or yellow. One might well wonder how, with such a contrivance fixed to the front of the head, the birds are able to fly, or even to hold their heads up. Yet actually the toucan's huge beak is not heavy at all. Though it looks so solid, it is merely a thin, horny sheath supported by a framework of very delicate bones, the spaces in the network being filled with air. So its weight does not bother the bird in the least.

How the Toucan Uses His Strange Bill

But what is the use of this extraordinary bill, you may say? Well, the toucan lives principally on fruit, and on the tall trees in South American forests most of the fruit grows toward the end of slender twigs which are too frail to bear the weight of such a stout bird. But by reason of his huge, gaudy beak, the toucan can sit on the thick part of the bough and reach the fruit at the bough's end quite easily.

The hornbill that lives in the tropical for-

ests of Africa, India, and the Malay countries is another bird with a huge, gaily colored bill, out of all proportion to the size of its head. Like the toucan's bill, however, it is quite

light to carry about. Since the hornbill too is fond of fruit, its bill probably serves the same purpose as does the toucan's. In every way the hornbill is a strange-looking bird. His plumage, which is generally black, white, and gray, is very loose and untidy. His neck and his tail are long, his wings and legs are short, and he flops about in a most ungainly manner. On his head he wears a queer-looking kind of helmet, which is practically hollow and, like his bill, is colored orange red.

The nesting habits of hornbills are quite as peculiar as their appearance. The father and mother look about until they find a hole in a tree which they consider suitable for their nursery, and at once the female enters and takes possession of it. The entrance to the nest is then plastered up, leaving only a small slit big enough for the bird



Photo by Field Museum

A rhinoceros hornbill is feeding his mate in the nesting tree. Time must pass rather slowly for her, for she must remain inside her tree for several weeks. Meanwhile he feeds her with pellets of food. When the babies are two or three weeks old, the mother breaks down the wall and comes out. Often she and her mate at once build it up again, and continue to feed the children until they are large enough to come out into the world.



Photo by N. Y. Zoological Society

This big fellow is a toucan from South America. He is closely related to the hornbills of Africa, and uses his big bill to eat the tropical fruits.

SOME OF THE STRANGEST BIRDS IN THE WORLD



1. The jabiru of South America is a large stork nearly sixty inches in height. 2. The shoebill stork, the only representative of its family, is found only in the marshes along the Nile. It seems to be a cheerful bird, in spite of its unwieldy bill, which apparently serves no purpose at all.

3. This is the graceful black-necked stork. All storks are stately on the wing and can fly tremendous distances.

7. The saddle-billed stork of Africa, regarded by some as the most beautiful of all storks. Its plumage is black and white, but the black is full of beautiful purple reflections. The bird is here shown drinking.

6. The maguari stork of South America.

5. The European white stork, which likes to nest on chimneys. It has long been an important character in fairy tales.

4. A full-length portrait of the shoebill.

SOME OF THE STRANGEST BIRDS IN THE WORLD

inside to push the tip of her beak through. There she is kept prisoner until the eggs are hatched and the children are strong enough to make their first appearance in the outside world.

Some say the male bird does the plastering; others say that it is his mate who walls herself in; but probably both birds have a hand, or rather a beak, in the work. In any case, the male bird is very attentive to his wife all the time she is shut up in the tree. He brings her food, passing it to her through the slit in the doorway, and when the young ones are hatched he supplies them with food, too. Many weeks pass before the female bird and her children are ready to leave their prison; and at last when the door is broken down and the little family comes out into the air and sunlight, the poor male hornbill is quite worn out with all his labors.

The pelican is another bird with a peculiar beak. He is an odd bird altogether, about as big as a goose, with a large, heavy body, short legs, and webbed feet on which he waddles about in a most comical way. His beak is long, flat, and hooked at the tip, and the lower half can be distended to form a large skin pouch. This pouch can be used as a net to catch fish for the pelican's dinner and as a handy bag to keep the catch in until the bird is hungry.

How the Sociable Pelican Lives

Pelicans live near rivers, lakes, and swamps in many parts of the Old World as well as in both North and South America. They are

sociable birds, and large parties often go fishing together. Some pelicans wade into the water and when they come upon a shoal of fish the birds all beat the water with their great wings to drive the fish into the shallows near the shore. There the "haul" can easily be scooped up into the capacious pouches.

Most pelicans, however, plunge from the air like kingfishers, after their finny prey.

Although they are so clumsy on their feet, pelicans are first-rate swimmers; and in spite of their large size and their great weight they fly buoyantly and swiftly, with their long necks drawn back upon their shoulders and their feet stretched out behind, much as herons fly.

The shoebill is another bird—related to the herons—who owns a remarkable beak. He looks for all the world as if he had pushed his head into the toe of an oddly shaped shoe and couldn't pull it out again. So he always carries the shoe about with him.

He is a large, solitary bird, very seldom seen by anyone, for he lives in the dismal swamps of the African Nile. There he solemnly stalks about on his long storklike legs, shoveling frogs, snakes, and shellfish from the mud, and scooping fishes from the shallow waters with his peculiar "shoe."

The dignified storks are distinguished by their long legs and long, daggerlike bills. There are about twenty different kinds of storks, all natives of the Old World except the wood ibis, whose home is in North America. Judging from their long legs, their partly webbed front toes, and their short tails, one would take the storks to be wading



Photo by Ollivier, Paris

The European white stork commonly nests on the chimneys, as this pair in Strasbourg have done. It has long been regarded as a good omen for these long-legged creatures to take up their abode on a house, and everything is done to induce them to come back year after year. Sometimes a cart wheel is placed on top of the chimney, to furnish the birds with a firm foundation for their nests.

SOME OF THE STRANGEST BIRDS IN THE WORLD



Photo by American Museum of Natural History

This is one of the most interesting sights in all nature—a colony of flamingos. These strange and picturesque birds construct their nests of mud. The height of the nests makes them comparatively safe from tides,

though at times whole colonies have been destroyed by floods. At one time flamingos nested in Florida, but that day has passed, for they have been driven out by man. This colony is in the Bahamas.

birds who spend their time paddling in shallow water or walking on muddy shores.

The white stork is a fine big bird, standing from three to five feet on his long thin legs. He is dressed all in white except for his long wing quills, which are black; his legs and his beak are bright red.

In Holland, Denmark, and Germany, where the storks spend the summer months, these birds are held in great affection, and everyone hopes that a pair will build a nest on the housetop—for this is said to bring good luck. In many villages people put large boxes or cart wheels on the housetops to attract the attention of the storks and induce them to settle there. The storks seem to appreciate attentions of this sort, and once they have taken a fancy to a place they will return to it year after year.

The nest which is built on top of the box or cart wheel—or just flat on the roof or on top of the chimney—is a large untidy affair made up of a pile of sticks and reeds. There

the mother sits in state while the male bird stands on one leg on the roof close by, as stiff and as solemn as a sentry on guard.

The stork is a most attentive husband. Every now and again he flies off and comes

back with some tempting dainty—a small snake, a fish, or a plump frog—in his bill as a tender offering to his good wife; and when she is tired of sitting he will take her place for a time

while she stretches her legs and wings. He cannot sing to her, as storks have no voices; they are quite dumb. But he does his best to cheer the lady by clapping his wings and clattering his beak—which is the only way in which a stork is able to express his feelings.

At the end of the summer the storks, taking their young ones with them, go off to Africa.

And there they have a thoroughly good time. They stalk about on the mud by the rivers and wade in shallow pools, gobbling up snakes, liz-

At the right is the great bustard, which formerly was found over most of Europe, but now lives mainly in Eastern Europe, Western Asia, and Northern Africa. The seriema at the left is a bird of South America. Both are related to the cranes.

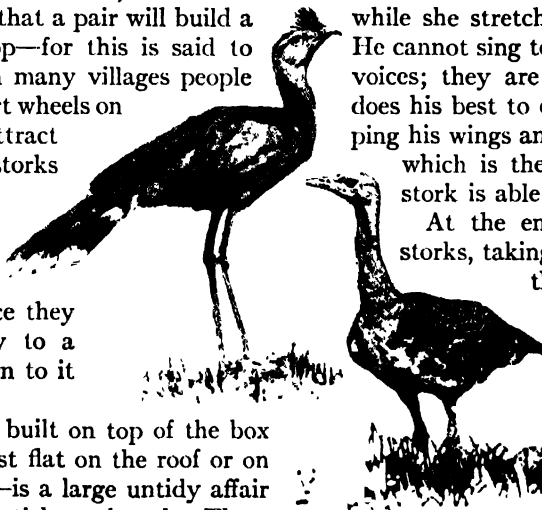


Photo by N. Y. Zoological Society

SOME OF THE STRANGEST BIRDS IN THE WORLD

ards, frogs, and other appetizing things such as storks enjoy.

The last of the curious wading birds we shall have time to visit are the flamingos (*flā-mīng'gō*), who are to be found on the shores of shallow lakes and salt lagoons in the warmer parts of both the Old and the New World. They are all much alike, but the rosy, or red, flamingo of northern tropical America is more vividly colored than his cousins in Southern Europe, Asia, and Africa; the plumage of Old World flamingos is mostly white flushed with rosy pink.

Flamingos are puzzling birds. At one time they were supposed to be long-legged swans. And they do look more like pink swans mounted on very long, spindly legs than anything else you can think of. But this is now known to be a mistake. Learned folk who study birds have decided that flamingos are closer to the herons.

Flamingos live together in large flocks. To see two or three hundred of these rosy-red birds feeding and amusing themselves in a shallow stretch of water is a truly wonderful sight. They are restless creatures, forever bending and twisting their long, snaky necks into all sorts of graceful curves, almost tying them into knots sometimes. They are noisy, too; every now and again a dozen or so will stretch their necks out straight and cluck loudly like a lot of geese, as if they were

having a violent quarrel. Then just as suddenly they all stop screaming. Some begin preening their feathers, others stalk stiffly about looking for frogs, crabs, and shellfish, or grab up and swallow a beakful of weed.

A flamingo has a peculiar beak. It is bent sharply downward at the middle, and

since the lower mandible is heavier than the upper, it presents the appearance of the bill of a goose upside down. Indeed, it is used much like the bill of a goose in the soft mud where the flamingo feeds, because when the bird reaches down with its long neck, its inverted bill assumes the same relationship to the mollusks in the mud as would the bill of a goose in its natural position.

When the nesting season comes round the flamingos all set to work making mud-pie nests on the tidal flats. These queer nests are like little hillocks of mud and usually stand in the water with the tops rising six or eight

inches above the surface. Then, when she has laid two large bluish eggs, the female flamingo sits on the top of her hillock with her long legs doubled up and projecting behind her. Her long, swanlike neck is curled away among the feathers on her back, and her head rests on her breast.

When the baby flamingos are hatched, the first meal their mother gives them is a kind of "clam broth." The second course consists of bits of their own eggshells.



Photo by American Museum of Natural History

Here is a domestic scene, with a female flamingo as the principal character. She is feeding her chick by disgorging pre-digested mollusks, which form their chief article of food. The flamingos find the shellfish by probing in the mud with their strange curved bills, which are especially adapted to the task.

The STORY of BIRDS

Reading Unit No. 22

BIRDS OF THE STORMY SEA

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

The hungry gulls, 4-200-203
Why Salt Lake City built a monument to the gulls, 4-201
Terns and skimmers, 4-203-4
The extinction of the great auk,

4-205
The much-crowded murre, 4-206-7
The comical puffins, 4-208

Things to Think About

What do sea gulls eat?
How did gulls save early settlers from starvation?
Why are gulls and terns increasing in number?

Why are there no more great auks left in the world?
Why are murre's eggs safe on bare rock ledges?
How do puffins get a fish dinner?

Picture Hunt

Why do sea gulls stand so still on their perches? 4-201
Why were steps taken to save laughing gulls? 4-203
Who are the skua's neighbors? 4-204

Why did sailors kill great auks? 4-205
Why are nesting sea birds unafraid of man? 4-206
How can the least tern be saved? 4-204

Related Material

What have ladies' hats to do with bird life? 4-140-46
What happened in Utah that caused the state to erect a mon-

ument to gulls? 4-201
What is the truth about hawks and the harm they are said to do? 4-153-54

Leisure-time Activities

PROJECT NO. 1: Watch gulls and terns over a bay or along the ocean front. What do they do with clams? 4-201
PROJECT NO. 2: Visit a museum of natural history and study

the sea birds discussed in this chapter.
PROJECT NO. 3: Find in books and magazines pictures of gulls and terns.

Summary Statement

Sea birds are fine swimmers. In the summer they gather in large numbers to lay their eggs and to raise families. In the win-

ter they are often far out at sea. Some sea birds, like the great auk, have been wiped out by cruel and thoughtless men.

BIRDS OF THE STORMY SEA



Photo by American Museum of Natural History

Along the rocky shores of the cold northern seas, birds congregate in vast numbers every summer to breed. Nearly all the species found in these regions live on various salt water creatures. Above is Little Diamond

Island, in Bering Strait. Here we find Pacific kittiwakes, several kinds of puffins, murres, and guillemots. Many of these same birds will spend the bitter winter months far out at sea.

BIRDS *of the* STORMY SEA

*Undismayed by the Breakers or the Roaring Winds, the Birds
Who Love the Sea Rear Their Young along Its Shores
and Skim Its Tossing Waves*

LONG, long ago—so the story goes—the sea was roaring and tossing the foam from its white-crested waves high into the air. The wind came sweeping by, caught the sea foam and whirled it away; and behold! the delicate froth was changed into a flock of sea birds—gray as the stormy waves, white as the foam, with the sound of the wind and the sea in their voices.

This, of course, is only an old fairy tale, but it is a very pretty one. For when we watch these free, untamed children of the sea and air as they toss about on the waves or glide and soar and whirl overhead, we can understand how it was that many people of olden time, hearing their wild cries, imagined that sea birds were born of the wind and the waves.

When we speak of sea birds it is usually the gulls we are thinking of. For these beautiful gray and white birds, with their great, strong wings and their bold, fearless ways, are more familiar to us than any others. There are very few coasts, all the world over, where gulls of some kind are not to be seen wheeling, gliding, and skimming over the water, running about on the shore, or bobbing up and down as lightly as corks on the top of the waves. They seem to delight in stormy weather, and scream and whirl in the air as if they thoroughly enjoyed being tossed and buffeted about by the rough wind.

On calmer days the gulls are fond of riding on the sea, steering themselves with their strong webbed feet as they rise and fall happily on the crests of the waves. They swim

BIRDS OF THE STORMY SEA

perfectly and walk very well, too. It is most amusing to watch them running about, with funny little jerks, as they hunt for worms and shellfish or, in great excitement, snap up baby crabs when the tide is out. They are most intelligent birds. If a gull finds a clam with its shell tightly shut, he will seize it in his bill, fly up into the air with it, and drop it plump on the shore. If the clam falls on a rock the shell breaks and the gull enjoys the dainty morsel inside. But this does not always happen the first time. The clam may fall on soft sand. Then when the gull swoops down on it he finds it as firmly shut as ever. This, of course, is very annoying, but the gull is not easily beaten at the game. He will seize the clam in his bill, mount aloft with it, and dash it down again a dozen times or more before he gives the thing up as a bad job and goes off in disgust to find something else for dinner.

Gulls are very greedy birds. They will eat almost anything. Flocks of hungry gulls will scour the beaches for any dead fishes, squids, or porpoises cast up by the waves, and will clear away all but the hard bones, as cleanly as vultures do. They pursue shoals of herrings and mackerel out at sea, and with wild screams of excitement plunge into the water and catch large quantities of fishes. And they will follow ocean-bound boats for miles to pick up the waste scraps of food thrown overboard from the cook's galley.

Why There Is a Monument to the Gulls

The herring gulls and the laughing gulls are the two best-known of the tribe in East-

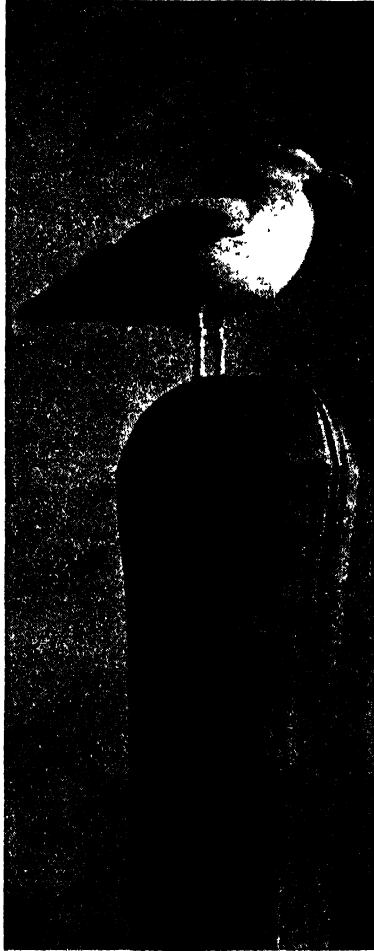
ern North America. They haunt the Atlantic coast, as well as the coast of the Gulf of Mexico, for many months of the year, often wandering far inland about the lakes and the larger rivers. In every harbor and river mouth hundreds, sometimes thousands, of gulls are always flying, screaming, paddling, or running about on the mud flats, excitedly hunting for something to eat. They are very useful birds, always welcomed by farmers. They will follow the plow and eagerly gobble up the grubs as fast as the creatures are turned up with the soil; and at times when there is a plague of harmful insects in certain parts of the country, the gulls will come to the rescue and save the threatened crops.

In the midst of Salt Lake City stands a tall stone column, with two gulls in gilded bronze poised on the top of it and at its base a pool wherein all thirsty birds may come and drink. This monument was erected in honor of an immense flock of gulls that in 1848 saved the early settlers from starvation by devouring the hordes of locusts which were destroying the crops.

The herring gull is a splendid bird about two feet in length; he is clad in snowy-white plumage, with wings and back of pearly

gray. His wings are tipped with black, his feet are pink, and his bill is yellow.

The laughing gull is also white and gray, but has red legs and a red beak. In the spring it wears a sooty-colored hood, so it is often called the black-headed gull. But as soon as the nesting season is over, the bird moults and its head is nearly pure white again.



From Frederic Lewis

Posts along the seashore just beyond the water's edge are very likely to wear this handsome adornment. Still as statues the sea gulls perch on them. You would say the birds were stuffed. But in reality they are very wide awake indeed. They are watching for fish.

BIRDS OF THE STORMY SEA

Early in the springtime the gulls leave the inland waters and the more southern shores for the bird nurseries in the north, some traveling as far as Alaska, others not further than the Northern United States. They choose wild, desolate parts of the coasts or lonely rocky islets, where they are not likely to be interfered with. Many of these nurseries shelter thousands and thousands of sea birds of many kinds, some crowded together on the ledges of the rocky cliffs, others nesting among the boulders or on the sands of the shore. You can well imagine what a noise and commotion goes on with the excited birds all coming and going and screaming and calling at the top of their voices.

The herring gull usually makes its nest of dry seaweed among the rocks upon the ground, although now and again some birds have been known to build in trees a little way inland. Two or three greenish-brown or grayish eggs, covered all over with spots and blotches of brown and black, are laid in each nest, and the mother settles down to hatch them. The baby gulls are soon able to run about on the shore on their flat webbed feet, which look much too big for the little birds' funny little round balls of bodies, which are covered with speckled down. The babies enjoy themselves greatly paddling about in the pools and trying their little wings. But the old gulls in the nursery—except of course for the youngsters' own par-

ents—are often very unkind to the birdlings and peck them unmercifully if the little things get in their way.

Even when the young ones are quite as big as their parents, they are still dressed in

mottled brown suits. They do not get their pretty white and gray plumage until they are two or three years old.

Herring gulls are rather quarrelsome birds, and sometimes steal one another's eggs—though they are not so bad in this way as the black-backed gull, who is a genuine thief and a bully. The black-backed gull is a handsome bird, with a snowy head and breast and a deep, blue-black mantle on its back and wings; but in the seabird nursery it is a perfect tyrant. Not only does it stick its sharp bill right through any eggs it sees left uncovered, and carry them off with a loud, mocking "ka-ha-ha-ha!" but it will even kill the downy fledglings in their nests.

Chief of the robber gulls is the "great skua gull," whose home is in the far north from Iceland to Alaska, though it sometimes visits the

coasts of the northern states.

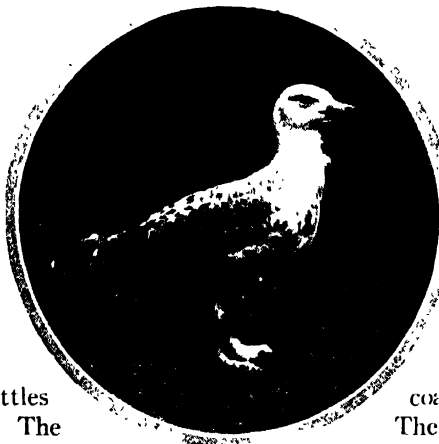
The skua is the largest of all the gull tribe. It is clothed in

dark brown plumage. Although it catches fish and eats shellfish, the skua gets a large portion of its food by chasing other birds and compelling them to give up their rightful prey. It kills and devours smaller sea birds, steals eggs, and altogether is a thoroughly bad character.

A very different bird is the pretty little



Sea gulls are among the most graceful flyers we have. Who can watch them without envying their slow, effortless movements? Gulls are found throughout the world, and are one of the characteristic birds of the ocean. But they often are seen far inland, too. The gull above has just caught a fish. Below is a great black-backed gull that has not yet acquired the solid black mantle across its back.



BIRDS OF THE STORMY SEA



Photo by American Museum of Natural History

The laughing gull, so called because of its curious notes, formerly bred from Maine to Texas. But fishermen collected and ate its eggs in such large numbers

that one is amazed to find the beautiful bird surviving at all. Luckily laughing gulls are now protected by law, and will probably grow more numerous again.

kittiwake that visits the coasts of North America in winter. It is a gentle, dainty bird with pearly-gray and white plumage, black legs and feet, yellow bill, and large dark eyes. It has gained its name from its rather plaintive cry—"Kitty-wake, Kitty-wake!"—which is heard as it circles overhead or patters about over the seaweed upon the shore, hunting for the small crabs and shellfish it so loves.

The Home of the Pretty Kittiwake

Kittiwakes make their nests on the narrowest ledges and little niches on the face of a high cliff in the bird nursery. The nests of the pretty birds are always clustered close together, and there they sit brooding high above the restless waves, and mingle their wailing cries with the roar of the sea.

Another delightful little gull, dear to the hearts of all who live on the northwestern prairies, is Franklin's gull, a dainty little bird hardly bigger than an ordinary pigeon. It has a gray mantle, a dark hood, and a white breast flushed with rosy pink. Early in May these pretty birds come flocking in from the south and follow the settler as he plows the land, picking up worms and grubs from the turned-up soil. The Franklin's gull is always welcomed, for it is such a friendly, fearless little bird. By the ranchers

in the west it is often called the "prairie dove" or the "prairie pigeon."

The nurseries chosen by these charming little gulls are the wide, marshy stretches on the borders of lakes. Here among the reeds and rushes they build their nests of dry weeds; sometimes these nests are half floating in the water. Thousands of these rosy gulls nest side by side, and when their eggs are hatched and the young ones are all paddling about trying to catch insects for themselves, the whole marsh seems alive with hosts of rosy gulls. The little ones swim up and down the running streamlets under the shelter of the tall rushes. If they attempt to wander right out on the broad lake, their parents head them off and drive them back to safety for fear that they may be blown out into the perils of the open water before they are strong enough to take care of themselves.

Charming Birds of the Sea

At close of summer, when the nights grow chilly, the Franklin's gulls with their young ones, who are now quite big and strong, take wing and fly away south to spend the winter months on the warmer coasts of the Gulf of Mexico, in Brazil, or in Chile.

The terns, who belong to the gull tribe, are most charming little sea birds. They

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are like miniature gulls with forked tails, and from this and the graceful way in which they skim through the air, they are often called sea swallows. It is a pretty sight to see a flock of these little terns, many no bigger than swallows, darting over the sea, hovering in the air, and suddenly plunging like arrows down into the water. Like their big cousins the gulls, terns are dressed in soft gray and white. Most of them in the summer time have black hoods or caps, and some are called the roseate (rō'zê-ât) terns, because, like the rosy gulls, they have pretty rose-pink breasts. They are delightful to watch.

There are many of these little sea birds in most parts of the world, from the arctic regions to the tropic seas. Several of them inhabit the sandy peninsulas and the small islands of the North American continent, although there are not nearly so many to be seen now as there were in the last century. In those days the terns, and the gulls as well, were most cruelly persecuted for the sake of their pretty feathers, which, to their shame be it said, people delighted to wear on their hats. So the birds in the nesting season were killed in countless numbers, until many species were almost exterminated and others were driven away to seek safer nurseries in wilder places where men with guns were not so

likely to molest them. This was a terrible time for all beautiful birds; but now we may rejoice that such cruelty is no longer allowed. The terns and the gulls in their nursery colonies in the United States are protected by law. No one is allowed to kill them or steal their eggs. So gradually the lovely birds are increasing in numbers once more.

The skimmers are cousins to the terns and are like them in many ways. But you may always know them by their peculiar beaks, which are very long and flat and almost as thin as a knife blade. The upper

half of the beak, moreover, is much shorter than the lower half. When the birds are feeding they skim over the water with their beaks wide open and the lower half below the surface. In this way the skimmers plow the water and snap up tiny fishes that swim by. They close their beaks on their prey like a pair of scissors."

The auks, guillemots (gîl'ê-môt), murres, and puffins are a curious family of sea birds. They are related to the gulls—though to look at them, one would never suspect it. These four types of bird belong to the auk family but are very different in appearance one from another. They all have very short legs, set far back; in fact, the guillemots and razor-bills can hardly walk at all on



Photo by Herbert G. Ponting from "The Great White South"
This powerful skua gull is watching her downy chick. Skuas are found in the oceans around both Poles, and are noted for their daring and aggressiveness. The species above lives in the south polar region.

The skua gull is an undesirable citizen in any community. Here he is stealing the eggs of a penguin; and even though some of the neighbors are attempting to aid the unhappy mother, they cannot prevail against the might of the bold skua.

Photo by Herbert G. Ponting from "The Great White South"



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land, and are always obliged to sit bolt upright when they are ashore.

All the auk family are birds of the northern seas; they are never found in the Southern Hemisphere. Their home is in the cold arctic regions on the coasts and islands of the Ber- ing Sea and the North Pacific Ocean, as well as of Labrador, Iceland, and Scandinavia, and the islands off the north of Scotland. Cer- tain of these is- lands are entire- ly populated by immense colonies of sea birds.

All the auks have stout, boat-shaped bodies, short wings and tails, and big webbed feet. When they sit bolt upright on their tails they look like little dogs beg- ging. Their headquarters are the lonely islands of the North Atlantic and Pacific, which countless numbers of sea bird take possession of, some living there all the year round, others using the is- lands as nurseries and sum- mer homes.

A very old family indeed are the auks. Thousands and thousands of years ago, in prehistoric times, their ancestors lived on the sea and made their nests among the frozen rocks in the polar regions—just as they do to- day. But the head of the family, the "great auk," or garcfowl, is seen there no longer, though less than a hundred years ago it was still nesting on a few rocky islands off the coasts of Newfoundland and Iceland.

The great auk was a strange bird, as big as a large goose and dressed in black and

white, as most of its descendants are to this day. On its black head was a large white spot, like a great white eye placed just below its real eyes. This gave the bird a weird, evil look. The odd creature had such very



Photos by A. A. Allen and American Museum of Natural History

The great auk was once very numerous. But because it was very tame and could not fly, it was mercilessly slaughtered by man for its flesh, feathers, and skin. This work was so complete that the great auk is now totally extinct. It probably bred along a good deal of the eastern coast of North America. Below is a puffin, a relative of the auks. During the mating season it wears a huge brightly colored beak, but when au- tumn comes, most of this strange adornment is shed.



short wings that they were of no use at all for fly- ing; the garcfowl used them mere- ly as flippers to paddle its way through the wa- ter. It was rather a dull and foolish bird, and seems to have had no notion how to take care of itself. So

when parties of bird hunters went over to the island, year after year, the great auks were killed in thousands. They could not fly, and they made hardly any attempt to escape from their cruel en- emies in any other way. So now the great auk, like many another interesting bird, is quite extinct.

Most of the auks are some- what confiding birds. They don't expect people to harm them—which makes it easy for hunters to approach and kill them. It is a good thing that we now have more con- sideration for birds and no longer slaughter them wholesale in such a horrible fashion. If we did, there would not be so many of these interesting sea birds living peacefully in their northern homes to-day.

One of the most remarkable of the auks is the rhinoceros auklet, which is sometimes seen in sheltered bays along the Pacific coast as far south as California. It has an extraor- dinary stout curved beak, colored orange and black, with a queer knob like the nose horn

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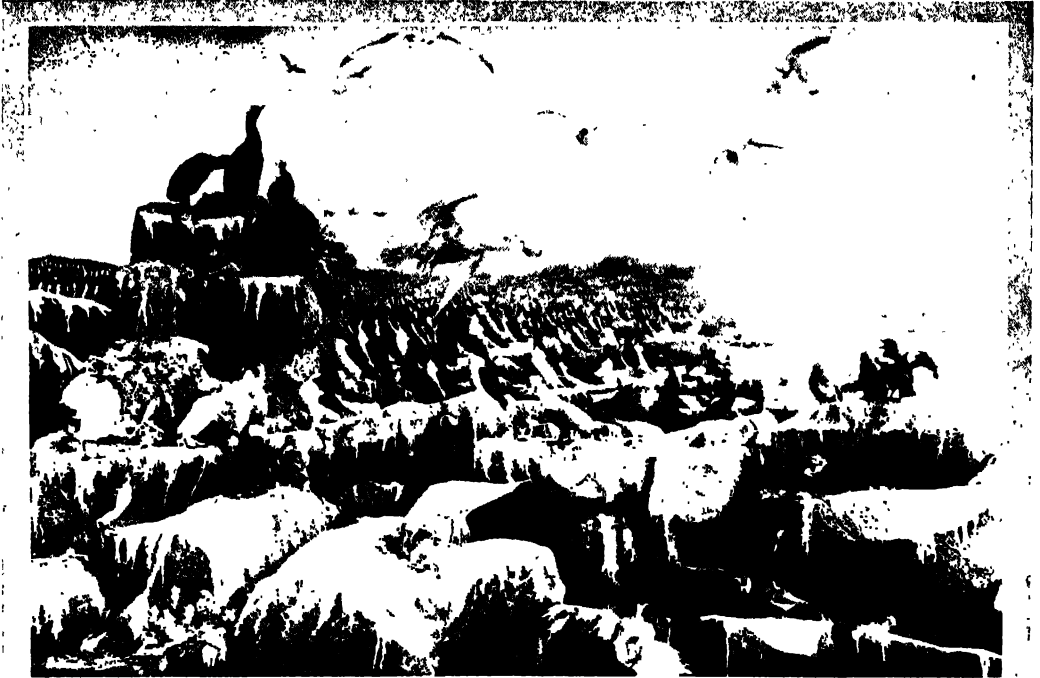


Photo by Field Museum

Sea birds usually breed in regions not often visited by man. For this reason they do not think of human beings as their enemies. When man does come, he

is often ignored and left to his task of destruction — for which nature has fitted him so well! This colony of birds lives in Bering Sea.

of a rhinoceros at the base. In the autumn when the bird moults, it sheds its nose horn and grows another again in the spring.

The Curious Adornments of the Auks

Several of the auks have strange adornments in the shape of feathery tufts and plumes, or curiously marked and wrinkled bills. For example, the crested auklet, which appears on many parts of the North Pacific coast in winter, has a long tuft of dusky plumes on its head; this curls right over its forehead. Besides this it has a row of short white feathers, like white whiskers, sweeping backward from beneath each eye, while its beak is covered with bright red horny plates which are shed in winter like the horn of the rhinoceros auklet.

The murre (*mûr*) and the razor-billed auk are very much alike in many ways. Both birds have pure white breasts; but the murre, who is slightly the larger of the two, has a grayer head and mantle, a longer neck, and a long, pointed beak, while the razorbill has a black head and mantle, and a beak shaped

like a razor and marked with white lines. They both fly rather heavily on account of the shortness of their wings, and waddle in a most absurd way when they try to walk on the land; but to make up for this, both the murre and razorbill are champion swimmers. They float as lightly as boats on the water, and using their wings as flippers, they dive most splendidly to catch the brisk little fishes on which they live.

Where Murres Make Their Nest

Murres are fond of company. When they are hatching their eggs they choose the top of steep rocks and the narrowest ledges high up on the face of tall cliffs in the bird nurseries, and there they sit in hundreds, so closely packed together that often there is not room for a single extra bird to squeeze itself in among them. Late comers are often seen scrambling and tumbling about on top of the other birds vainly trying to find places on a favorite ledge.

Murres make no attempt to build a nest. They do not even make a rough bed of sea-

BIRDS OF THE STORMY SEA

weed for their babies. Each bird simply lays a single egg on the hard, bare rock. And there she sits bolt upright on the top of it, hemmed in on both sides by her neighbors, who keep pushing and shoving each other most rudely in order to get a little more elbow room. Presently something startles them, and up they all fly in a whirling, feathery cloud, for murrens are nervous, fidgety birds always looking for trouble. In a moment or two, however, they find they have made a mistake, so down they all come again, and a tremendous racket and commotion goes on until every bird is once more happily settled on her own egg

How a Murre Knows Her Own Egg

How the female murre *does* know her own egg is something of a mystery. But maybe color has something to do with it. For, strange to say, you very rarely find two murrens' eggs exactly alike. They may be a shade of blue, green, red, white, or brown; and each one is marked in a different way, with dots, streaks, blotches, and scribbings. You would think, too, with all the struggling and scrambling that goes on, that there would soon be no eggs left on the ledges for the birds to hatch. And there certainly would not be if the eggs were ordinary eggs. But they are pear-shaped, and this makes them spin round in a circle when they are kicked, instead of rolling off the ledges as they would do if they were rounded. All the same, an extra hard kick *does* send an egg flying fairly often, and each time this happens another poor murre is left lamenting.

When all the eggs that have escaped destruction are hatched, the airy nurseries high up on the face of the cliff are more crowded than ever. You can imagine what it is like, with hundreds of baby murrens all huddled up together on the narrow ledges, while the old birds keep flying up with a silvery fish in their beaks for their own particular little ones.

How the Young Get Down to the Sea

As soon as the baby murrens are ready to leave the nursery there is another problem to be solved. How are they to get down to the sea, which is such a terrifying distance below them?

Well, some say the old birds coax their children to trust to their wings and fly bravely down to the tossing waves; others say the little things are pushed off the ledges by their parents. What probably happens is that some leave the cliffs in one way, some in another. While the bolder chicks launch themselves courageously into the air, the more timid ones are pushed overboard, and they flutter down willy-nilly into the water, their wings acting as parachutes to break their fall. Anyway, all the little murrens get down somehow.

Like the murrens, the razorbills lay only one egg apiece, but they are not so careless in choosing their nesting places. They often share the same cliff with the murrens, but their eggs are placed in little niches and crevices in the rocks instead of being merely dumped on a bare narrow shelf. This is fortunate, as a razorbill's egg is not so pointed. It would roll off the shelf at the slightest touch; and very few baby razorbills would

The least tern formerly bred along the Atlantic coast from Massachusetts southward. Later, its feathers appeared so often on ladies' hats that the living bird was rarely seen. It is doubtful whether, even with protective laws, this tern will ever be so abundant as it used to be.

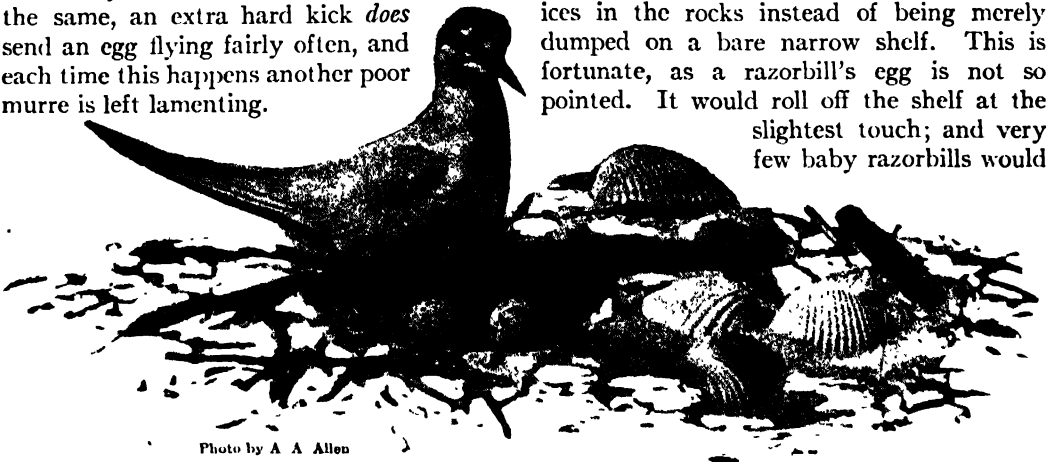


Photo by A. A. Allen

BIRDS OF THE STORMY SEA

ever have the chance of cracking their eggshells if their parents were as reckless as the foolish murre.

Both the father and mother razorbill sit on their one and only egg—taking turn and turn about. And when their fluffy chick is hatched they both stuff it with freshly caught fish; so the solitary youngster is a well-fed, not to say pampered, little bird.

The Ways of the Comical "Sea Parrot"

Puffins are still more careful of their single precious egg. They do not trust it to the ledges or crannies of towering cliffs, but deposit it in a deep burrow on the grassy slopes of a rocky, sea-girt island or on the low, turf-covered hills along the wild shores of the northern oceans.

Puffins—"sea parrots," as sailors call them—are most comical-looking birds, with plump bodies, stumpy tails, long, round heads, and enormous, gaily colored beaks. The tufted puffins, who spend nine months of the year far out on the waters of the North Pacific and Arctic oceans, are clothed in feathery suits of sooty black. Their webbed feet are bright vermilion, their faces dead white, and a long, straw-colored, feathery streamer curves backward from each eye and waves elegantly in the breeze. But the puffin's most remarkable feature is its huge, bright-red beak. It is triangular in shape, ornamented with horny plates of olive green or yellow, and looks like a ridiculous false nose!

How the Puffins Spend the Winter

Thus are the tufted puffins, both male and female, arrayed when they come flocking in their thousands to the coasts and islands, to which year after year they return in the springtime to rear their little ones. When summer is over the birds lose their colored nose plates, their white face marks, and their streamers; for these adornments are merely their wedding finery, worn only through the spring and summer days. Their feet, too, when winter is approaching, change from bright red to pale salmon pink.

Where there are many deserted rabbit burrows on the coast or islands the puffins move in and take possession of the vacant

premises; but if there are no ready-made nesting holes available, the birds dig out new ones for themselves in the soft, sandy slopes. Puffins are not easily discouraged, and should the soil be too hard and stony to dig in, they will set up house in any little nook or cranny among the rocks.

Birds That Fly under Water

Puffins walk better than murre and razorbills, for they stand on their toes as most birds do, but all these birds are uncomfortable on land. In the water it is quite a different story. There the puffins are thoroughly at home. They paddle about and bob up and down on the surface, their bright red legs plainly visible through the clear water; they dive below after the fishes and even chase them for quite a long way under the water. One might almost say that puffins "fly" under water, for they move their wings when they swim just as they do when flying through the air, while their feet trail behind them and are used only to steer with.

If ever you should see a baby puffin, you will surely agree that "puffin" is a very good name for the funny little creature. It is just a sooty-colored ball of fluff, which a puff of wind might blow away. It would never do to allow the little puffin out on a windy day—there is no knowing where it would be whirled to!

How Young Puffins Are Fed

But until it has grown a little bit heavier, and a little steadier on its absurd little legs, the young puffin does not venture far from home. It sits in the doorway of the burrow looking eagerly out to sea, waiting for father and mother to come hurrying home with its dinner. And this is where the puffins find their peculiar beak useful. It is really a most useful labor-saving device, for in it the birds can carry half a dozen little fishes all at the same time and so save themselves many a journey backward and forward between the sea and the hungry youngster at home. They carry the fishes crosswise in their beaks—heads hanging out at one side, tails at the other—instead of lengthwise, as birds who carry one fish at a time usually do.

The STORY of BIRDS

Reading Unit No. 23

THE GRACEFUL BIRDS OF THE DEEP

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

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How Orientals use birds to catch fish for them, 4-212-13

Gannets, 4-213-14

The piratical frigate bird, 4-214-

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The wandering albatross, 4-215-16

Petrels that haunt the deep seas, 4-217-18

The curious penguins, 4-218-21

Things to Think About

How are cormorants trained to catch and deliver fish to their masters?

How do frigate birds get fish that they do not deserve?

Why do ocean travelers admire the albatross?

What kind of food can birds find in the Antarctic?

How do penguins keep their eggs from freezing?

What social life does a penguin have?

Picture Hunt

How are trained cormorants prevented from swallowing fish? 4-212

What enemy does a frigate bird have? 4-215

How can penguins bear the cold Antarctic winds? 4-216

Why are penguins called "social" birds? 4-210

Why will penguins steal pebbles? 4-219

How does a penguin use his flippers? 4-220

Related Material

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What is a rookery? 4-146-47

How was the South Pole reached?

13-503-12

What is an important enemy of the penguin? 13-505

Leisure-time Activities

PROJECT NO. 1: Visit a large aquarium or zoo or museum to see birds of the open sea. In the New York City Aquarium there

are live penguins on exhibition.

PROJECT NO. 2: Find in books and magazines pictures of the birds mentioned in this unit.

Summary Statement

There are many interesting sea-going birds that are more at home riding the waves than on land.

They eat fish and shellfish, which they catch skillfully.

THE GRACEFUL BIRDS OF THE DEEP



Photo by Herbert G. Ponting from "The Great White South"

Gathered in solemn dignity upon their bleak Antarctic shore is this colony of penguins photographed by Mr. Ponting on the Scott Antarctic Expedition. All but one variety of these amusing birds live in the Antarctic. That one, it is thought, followed the cold Antarctic current north to the Galapagos Islands, at

the Equator, and there it makes its home. But if it wanders out of that cold ocean stream, it often perishes. Once upon a time, millions of years ago, there was a gigantic penguin seven feet high, but now the birds are all much smaller. They always live together in colonies, which may contain tens of thousands.

THE GRACEFUL BIRDS OF THE DEEP



Photo by American Museum of Natural History

Brandt's cormorants are found along the Pacific coast of North America, where they breed. They are expert swimmers, even braving the water when it is lashed

to a fury. Cormorants are not very closely related to auks, as one might suppose, but rather to the pelican. The mother at the right is feeding her youngster.

The GRACEFUL BIRDS of the DEEP

Fearless of Mien and Beautiful in Flight, the Birds That Spend Their Lives upon the Sea Are among the Handsomest of All the Feathered Folk

THE soaring birds that get their living from the deep must be able to do a good deal more upon the wing than just keep aloft. They must swoop and dart and plunge beneath the spray to get the swift fish that are their food. If eye fails them or wing grows slow their lives are soon over. We shall not be surprised, then, to find that the sea birds are matchless fishermen. In fact, on earlier pages you may already have read of all the auks and gulls that snatch a fish from the water with such amazing skill.

Another clever fishing bird of a different character is the dark cormorant (*kôr'mô-rânt*)—a strange-looking fellow with green-

ish-black plumage and a long, snaky neck. He cannot be called handsome or graceful. On shore he straddles about on his short legs in a most ungainly fashion; and although he is quick and strong on the wing, he flaps his way along very heavily, often flying so low that his feet and tail keep dipping into the water.

The cormorant is cousin to the water turkey; and like that strange bird of the southern marshes, he pursues his prey under the water. He swims by powerful strokes of his strong, webbed feet, seldom using his wings as propellers, as the puffin does.

Cormorants are terribly greedy birds. They will go on catching fish and gulping them

THE GRACEFUL BIRDS OF THE DEEP



Photo by Presse-Photo, Berlin

This Chinese youth uses cormorants instead of a hook and line when he goes fishing. A ring is put around

the birds' necks, so that none of the catch will be swallowed. The tired fishers are now resting.

down their long throats, one after another, until they cannot swallow another mouthful! Then they retire to a rocky pinnacle or perch on top of a post standing up in the water, to digest their heavy meal. And there these strange birds will sit, perfectly motionless, with their ugly heads sunk between their hunched shoulders—just like vultures.

Although they are not beautiful or graceful like the gulls and the terns, cormorants are interesting and intelligent birds. They are most exacting about their toilets, and are often to be seen perched high up on the rocks preening their feathers with their bills. They are fond, too, of sunning themselves,

and will sit for a long time on a favorite perch with their snaky necks outstretched and their dark wings spread out to dry in the warm air.

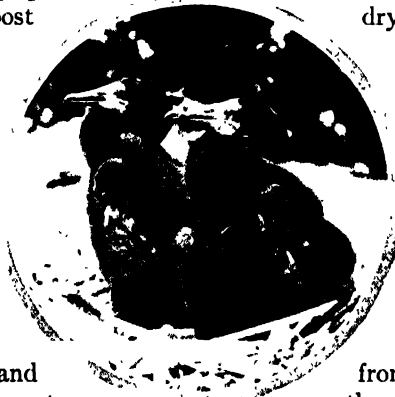


Photo by U. S. Bureau of Biological Survey

These baby double-crested cormorants have just decided, it would seem, how important they are in this world and are thinking of doing something about it.

In China and Japan cormorants are captured when they are young and trained to catch fish for their owners. At first collars are fastened round the birds' necks—just tight enough to prevent them from swallowing the fishes—while cords attached to the collars keep the birds

from flying away. In this way the cormorants soon learn their lesson. Then, when their education is completed, they are allowed to fish without the collar; and the clever birds bring every fish they catch to their master,

THE GRACEFUL BIRDS OF THE DEEP

until as a reward for good behavior they are told they may fish for themselves.

The double-crested cormorant is well known along the shores of the North Atlantic and round about the larger lakes and rivers of the central states, where it usually appears in the fall.

It is a big bird, two and a half feet from bill tip to tail tip, and is distinguished by having a double crest of short, dark feathers on the top of its head. It is often accused of doing harm to the salmon fisheries, but this is unjust, as the bird lives almost entirely on slow-moving fishes, such as the sculpin, which are quite unfit for food. It may, it is true, capture an eel, a tomcod, or a few herrings now and then.

Cormorants make very large and very untidy nests, mostly of sticks, and seaweed. The nests are placed on rocky islands and cliffs by the sea, or sometimes further inland in the trees. Two, three, or four bluish eggs are laid by the female cormorant, and when her babies are hatched they are just about the queerest, ugliest little things you ever saw! They are covered with slippery black skin and haven't a feather among them. They look more like absurd rubber toys than like anything else! Soon, however, the baby cormorants grow fluffy coats of black down and change in appearance from toys to

woolly golliwogs. For weeks the little creatures are fed by their parents in a most astonishing way. The old birds go fishing. Then they swallow the fish, fly back to the nest, and open their beaks wide; and the young cormorants put their heads right down their parents' throats and help themselves.

In stormy weather, when many birds come flocking in from the open sea to take refuge on the calmer waters and the rocks near the shore, a large white bird, as big as a goose, may sometimes be sighted heading for the coasts of the North Atlantic. It flies steadily, sometimes sailing through the air, sometimes flapping its long, pointed wings. Then, alighting on a wave-washed rock, it lifts its long, pointed beak to the skies and gives a hoarse cry, as if it were defying the storm which has driven it in from the deep waters.

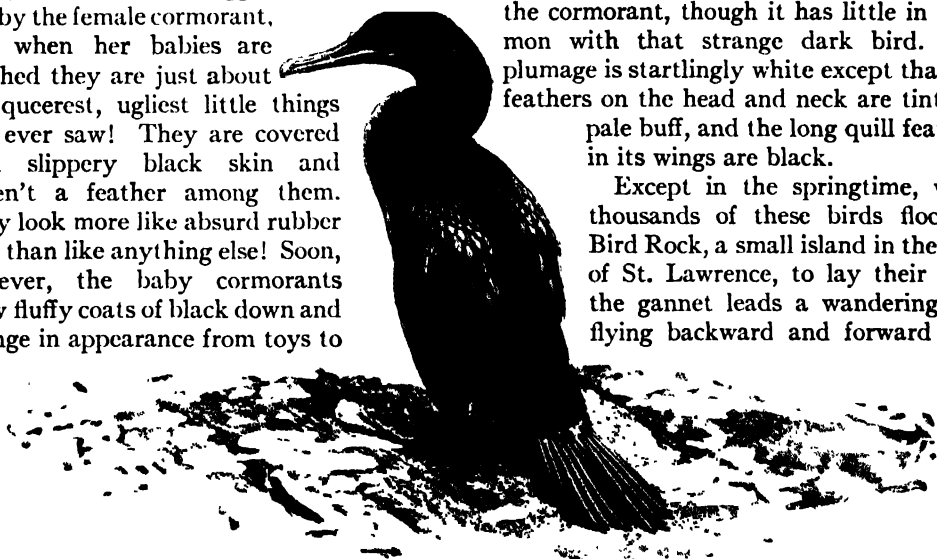
This is the gannet, cousin to the cormorant, though it has little in common with that strange dark bird. Its plumage is startlingly white except that the feathers on the head and neck are tinted a pale buff, and the long quill feathers in its wings are black.

Except in the springtime, when thousands of these birds flock to Bird Rock, a small island in the Gulf of St. Lawrence, to lay their eggs, the gannet leads a wandering life, flying backward and forward over



Photos by Natu Magazine and N. Y. logical Society

The cormorant so patiently hatching her eggs belongs to the common variety, which is a beautiful bottle green in color. In spring we may see her flying over our heads on the way to her nesting grounds on the rugged coast of Labrador. The old fellow below has lost the power of flight. He lives on the hot islands off the coast of South America.



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the sea, and resting upon the waves or a rock rising from the water when its beautiful wings are tired.

It feeds on squids, and fish that swim near the surface, which it captures in a really marvelous way. Mounting up and up until it is quite a hundred feet above the sea, the gannet sails round majestically, keeping its eyes fixed upon the moving waters below. Suddenly it plunges headlong from the sky, closing its wings as it nears the surface of the water, and in it goes with a mighty splash, sending a shower of spray like a fountain high into the air. In twelve or fifteen seconds the bird is up again triumphantly holding a glittering fish in his beak. So quick and so sure in its aim is this fisher bird that it rarely misses its mark, and many a brisk little sprat, herring, and mackerel disappears down its throat before they even have time to think about it.

Baby gannets do not in the least resemble their cousins, the little black cormorants. Although they have no feathers when they are first hatched, they are soon covered with white cottony down, which makes them look exactly like powder puffs. The old birds feed their young ones just as cormorants do—opening their beaks and allowing the children to take the half-digested fish from their throats.

When the little gannets change their downy coats

for their first real feathery suits they are a sooty-black color, marked with streaks and spots of grayish white. Every year after they moult they are a little lighter in color; but not until they are six years old are they fully clad in the beautiful snowy plumage that distinguishes the grown gannets.

Quite unlike the cormorant and the gannet is the splendid frigate bird that haunts the tropical seas. It is as swift and graceful on the wing as a gull, and spends nearly all its days sailing over the ocean waves, seldom coming near the land except at nesting time.

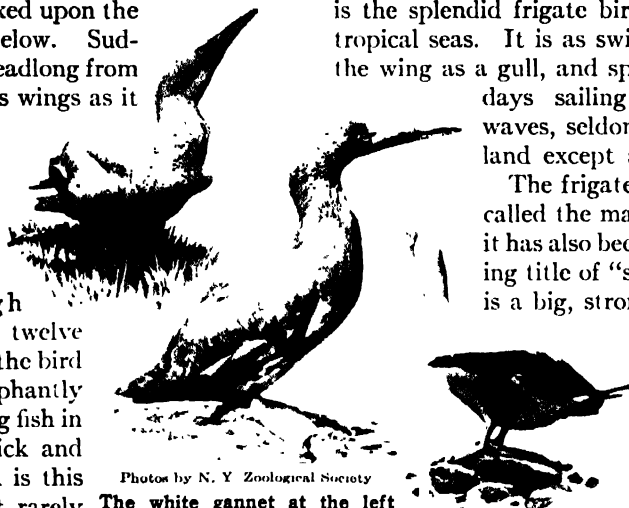
The frigate bird is sometimes called the man-of-war bird, and it has also been given the charming title of "son-of-the-sun." It is a big, strong bird, with long,

pointed wings and a long, forked tail. Its plumage is a very dark brown shot with green and purple lights, and hanging beneath its

beak is a curious pouch of scarlet skin, which the bird inflates when it flies until it looks like a small, blown-out air balloon. Only the male frigate bird has this funny, expansible pouch, which loses its bright red color in the winter time. The female, who is not so dark as her mate, is not adorned in this peculiar way.

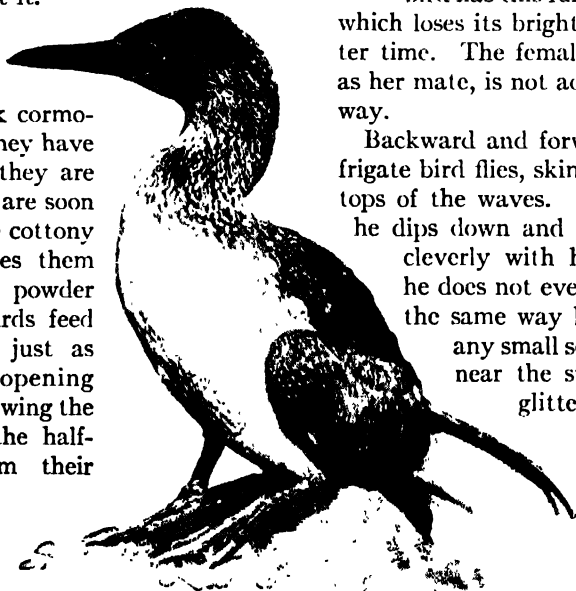
Backward and forward over the sea the frigate bird flies, skimming lightly over the tops of the waves. Every now and again he dips down and snatches up a fish so cleverly with his hooked beak that he does not even ruffle the water. In the same way he catches squids and any small sea creatures swimming near the surface, and seizes the glittering flying fishes as they leap from their watery home to take a short gliding flight in the warm sunlit air.

Yet although he



Photos by N. Y. Zoological Society

The white gannet at the left does not appear to be the strong flyer that he really is. In the center is a brown booby, and at the right a blue-faced booby. At the bottom of the page you see a gannet of another species. All the birds on this page are related, and all of them love the sea.



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is quite able to provide for himself, the frigate bird is a lazy rascal. If he sees another bird fishing he is certain to swoop down on it and force the poor thing to give up its dinner. The frigate bird is, in fact, a genuine sea pirate. He will rob any other bird, big or small, in the most tyrannical fashion. Terns and "boobies," as gannets are called in the southern seas, are often the victims of these wild sea rovers, and so are the beautiful "tropic birds," which, like the boobies, are his own relatives.

Tropic birds, or "boat-swain birds," as sailors call them, are like small gulls or terns with very long tapering tails. Some are pure white with fine black markings on their feathers; others are a lovely apricot color, also marked with black; others again, are white tinged with red, and have bright coral-red beaks.

But most famous of all these bold sea rovers is the great albatross, the largest of all sea birds. He has been named the "wanderer" because he is constantly on the wing wandering here and there over the ocean. The bird is quite four feet long, and his wings when outstretched measure ten or twelve feet across from tip to tip.

These great wings, for their length, are very narrow, but they are exceedingly strong, and the flight of the albatross is one of the most wonderful sights to be seen far out at sea.

For days together this splendid bird will follow a ship hundreds of miles across the sea, sometimes leading the way, sometimes following in the wake, sometimes wheeling round and round the ship in great sweeping circles.

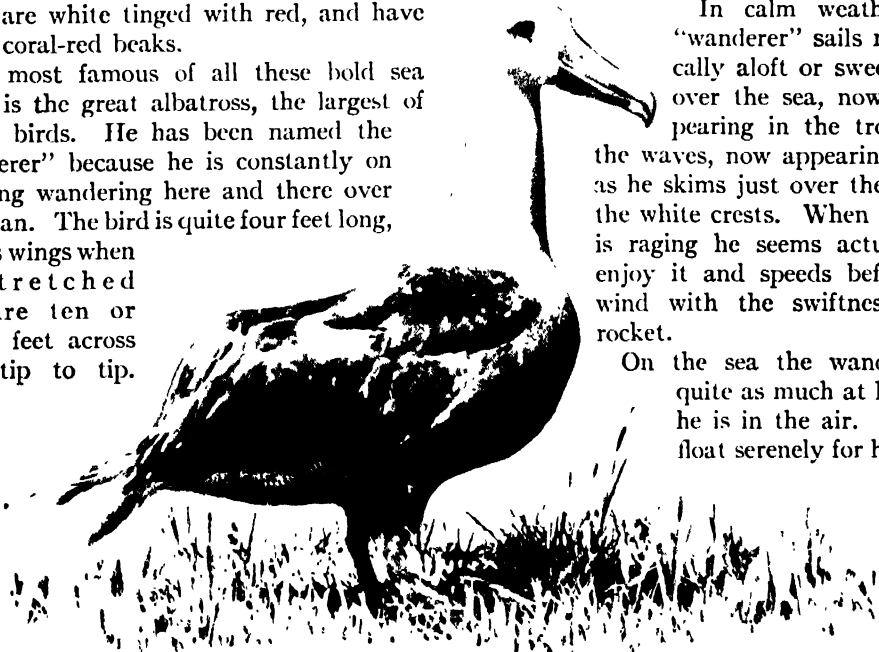
The albatross does not fly like other birds. With his long wings outspread he seems to float and glide through the air. You may watch him for a long, long time without detecting a single movement of those wonderful wings. When he rises or changes his course he banks like an airplane—pointing one wing skyward and the other downward toward the sea in a truly wonderful way.

In calm weather the "wanderer" sails majestically aloft or sweeps low over the sea, now disappearing in the trough of the waves, now appearing again as he skims just over the top of the white crests. When a storm is raging he seems actually to enjoy it and speeds before the wind with the swiftness of a rocket.

On the sea the wanderer is quite as much at home as he is in the air. He will float serenely for hours on



The frigate bird above is going to enjoy life while he can—for there is no telling when he may be killed for his feathers! He makes his home on tropical islands. Below is an albatross from the Galapagos. He is more at home in the air than on land, where his gait is most ungainly.



Photos by N. Y. Zoological Society

THE GRACEFUL BIRDS OF THE DEEP



Photo by Herbert G. Ponting from "The Great White South"

Having never seen such strange creatures as men, these penguins do not know what to make of their new playmates. Mr. Herbert G. Ponting, the photographer, accompanied Captain Scott on his famous voy-

age to the Antarctic, and there made the acquaintance of these delightful birds. Penguins are able to withstand the terrific Antarctic cold by reason of their heavy coats of soft, thick feathers.

the water, and sleep there quite comfortably, rocked up and down by the waves. The sea supplies him with all he needs. He feeds on the fishes, squids, and jellyfish that swim in the surface waters of the ocean; he will make a hearty meal off a dead whale or a big fish floating on the top of the sea; and he will gulp down any sort of scraps, good or bad, thrown overboard from the ship he is accompanying on its voyage across the ocean.

Too Full of Dinner to Fly

Sometimes the albatross eats so much that he cannot rise from the water, and the greedy bird is obliged to stay there until he has digested his dinner and is light enough to mount into the air again. Although he is so big and strong, he is not very courageous, for he will often allow a sea eagle or even one of the big gulls to rob him of his food; yet if a man falls overboard from a ship the albatross is very likely to attack him while he is helpless in the water.

On land the albatross loses all his grace and dignity. His short legs and great webbed feet make him waddle about in the most awkward way, and he seems as much out of his element as a "fish out of water"!

He has some difficulty, too, in rising into the air from level ground. He is obliged to take off from a rock or a hillock unless a strong wind is blowing; then he faces the wind, opens his wings, and up he goes like a kite.

How the Albatross Mounts into the Air

At sea he patters over the top of the water with his head stretched forward and his wings flapping for sixty or seventy yards before he can get sufficient speed to launch himself into the air.

Nesting time is the only time the albatross forsakes his wandering life over the ocean waves. Then in enormous numbers these great birds flock to the lonely islands far out at sea. There side by side they make their nests of tufts of grass and moss, and clods of earth. Indeed in many of these albatross nurseries the nests are so closely packed together that there is hardly room to step between them. The whole island is literally covered with the sitting birds, while their mates stand by on guard filling the air with their loud, hoarse cries.

There are a dozen different kinds of albatross, all inhabitants of the southern

THE GRACEFUL BIRDS OF THE DEEP

seas. The smaller, darker kinds are often called "mollymauks" or "mollymokes" by the sailors. They are frequently sighted right out in mid-ocean skimming low over the sea.

Birds of the Tube-nosed Tribe

The albatrosses belong to a large and distinguished tribe of sea birds called the "tube-nosed birds," because the nostrils of all the members of the tribe are drawn out into a pair of tubes, which rest on the ridge of the birds' beaks. All the albatrosses and their relatives the petrels have noses like this, and with hardly an exception they are ocean wanderers.

Most of the petrels (pĕt'rĕl) are rather small birds, but the "giant petrel" is a fine fellow with a wing expanse of nearly six feet. In its ways the giant petrel is not nearly so aristocratic as its cousin the wanderer. It haunts the coasts on the lookout for dead whales and seals stranded on the shore, and, as in the case of the vultures, when one of these birds discovers a prize it is quickly joined by several others of its kind and they all gorge themselves with food until they are unable to fly. Sailors have many names for the giant petrels. They call them "Nellie," "break-bones," and "stinkers." The last name has been bestowed upon them on account of a very pleasant habit they have of squinging a disgusting oily fluid from their tube noses if anyone disturbs them while they are enjoying a meal.

The stormy petrel, or Mother Carey's chicken, is a little creature no bigger than a lark, yet by its long, narrow wings and its buoyant flight you might guess that it was re-

lated to the great wanderer. It is a pretty little bird with sooty-black plumage—except for a patch of white on its wings and another on its back near the tail.

Just before a storm at sea flocks of stormy petrels are often to be seen skimming along on the top of the waves, patting the water with their little webbed feet just as if they were actually running on the surface of the sea. Sailors do not like to see the stormy petrels behaving in this way. They say they bring bad weather. Really, of course, it is the bad weather that brings the birds, and not the birds the weather.

Petrels That Haunt the Deep Seas

Petrels of one kind or another haunt the deep seas in most parts of the world, although their headquarters are in the Southern Hemisphere. Many of them are in the habit of following ships across the oceans. The pretty black and white "Cape pigeons," as they are called, are known on the high

seas from Ceylon to Peru. They are often to be seen hovering round the boats; every now and then they will plunge into the water with loud, hoarse cackles and fight for scraps of food. But most charming of all is the snow petrel, a beautiful pure white bird hardly bigger than a pigeon; it flies over the frozen seas of the Antarctic Ocean.

Life in the Antarctic is quite different from life in the far north. Round about the South Pole stretches an immense continent as big as Europe and Australia put together. All the year round almost the

These king penguins are making the most of the changed climate and free food at the New York zoo. They take as much interest in the visitors as the visitors do in them.

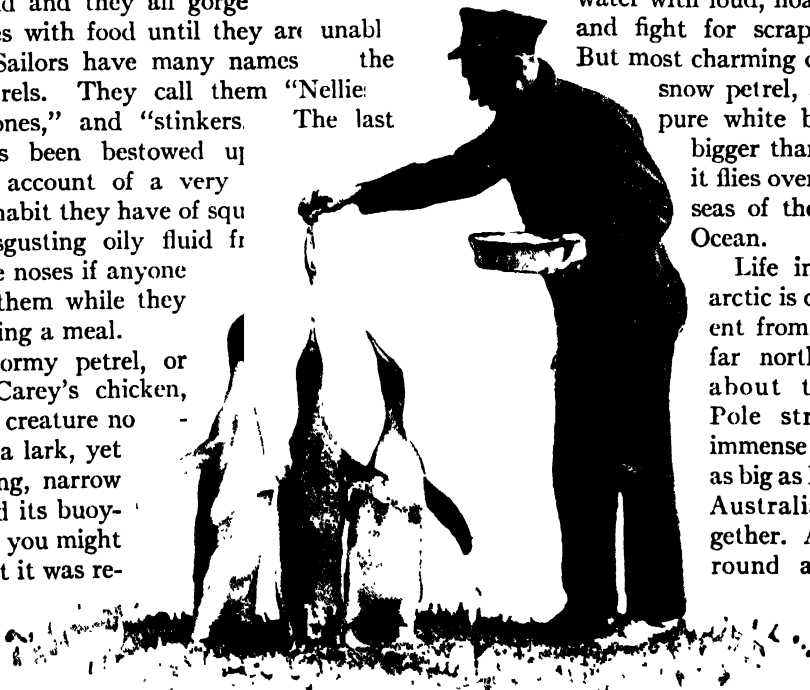
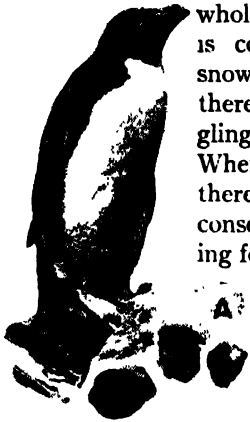


Photo by N. Y. Zoological Society

THE GRACEFUL BIRDS OF THE DEEP



The golden-crested penguin above is one of the interesting citizens of the Antarctic.

footed animal or a single resident land bird.

But in the sea that washes the frozen shores of the Antarctic there is always plenty of food to be found, even though great stretches are covered with pack ice and ice floes. Fishes great and

This king penguin appears to be trumpeting. He is one of the largest of all penguins. Only the emperor penguin exceeds him in size.



whole of this great country is covered with ice and snow; no plants can grow there except a few straggling mosses and lichens. Where there are no plants there are no insects, and consequently there is nothing for bird or beast to eat.

So on the barren waste lands round the South Pole there is not a single four-

very long so far south. As soon as the young ones are fit to fly, away they all go to seek warmer sunnier seas and shores. They are only summer visitors to the Antarctic. The only birds who can be



Humboldt's penguin, shown above, is found on the sparsely settled tip of South America.



Photos by N. Y. Zoological Society and Herbert G. Ponting from "The Great White South"

On this page are a number of different varieties of penguin. Most of them are found in the cold regions at the "bottom of the world." The mother shown here was photographed by the Scott Antarctic Expedition after she had been snowed in.

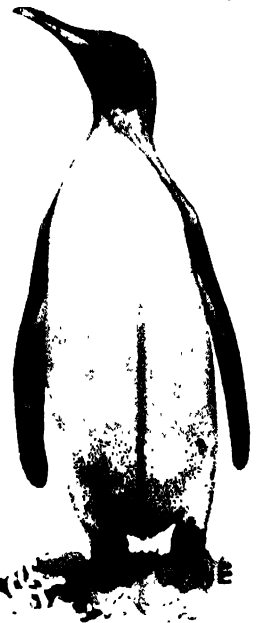
C called natives of those desolate ice-bound shores are the penguins.

Penguins are surely the strangest of all living birds. When they are strutting about on the land, holding themselves

bolt upright, they look like a race of queer little dwarfs,

all wearing black cloaks and long white frocks right down to their heels. Their wings are merely two long, narrow flippers, which they hold out just as if they were arms. When the birds are in a hurry they whirl these flippers round like the sails of a windmill in their frantic efforts to get over the ground quickly. Another curious thing about

Nearly all penguins, this king penguin included, have furnished food for explorers in the Antarctic. Their trusting confidence in man can hardly have lasted long.



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them is that they appear to have no legs. This is because they are completely incased in skin, and only their large flat webbed feet are visible below their long, feathery garments.

These strange birds cannot fly at all. But their flipper wings make excellent paddles, and since penguins spend almost all their time in the sea this is a great help to them. They are as much at home in the water as seals and porpoises are. They play like porpoises, too, wriggling and rolling from side to side, beating the water first with one flipper then with the other, sending it up in showers, and splashing one another in sheer light-heartedness.

Penguins swim most beautifully using their wings as oars and their feet merely as rudders to steer with. They fill their lungs with air, dive down after the fishes, chase them under water, and even swallow them without rising to the surface. But sometimes when they are enjoying themselves the penguins in their turn are chased by the fierce sea leopard, a large spotted seal that haunts the southern seas.

Largest of all the penguins is the "emperor," a fine bird who stands between three and four feet high on his two flat feet. He never comes to land at all, but spends all his days either in the sea or scrambling about the pack ice off the shore. Emperor penguins even lay their eggs on the ice, in the coldest, most wintry weather. And to prevent the eggs from freezing solid, every mother penguin places her egg on the back of her feet and

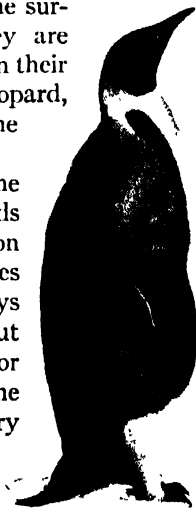
crouches down on the top of it, covering it closely with her loose, warm feathers. Even so, though the birds do their best to keep the eggs warm, many do not hatch; and the penguins who have no little chicks are most terribly jealous of those who are more fortunate. They will even try to steal their neighbor's babies when the parents leave them for a moment uncovered. Sometimes two or three childless mothers grab one of the poor little things all at the same time and have a tug-of-war with it!

Penguins are very sociable birds. At sea they roam about together in large "schools"; and on land they live in real settlements, which are called rookeries. The black-throated penguins, who are very much smaller than the emperors, come trooping in thousands from the sea at nesting time to settle in these rookeries on the Antarctic seaboard. In some



Photos by Herbert G. Ponting for "The Great White"

One of the principal occupations of the male penguin is stealing pebbles which he takes home to his mate. These are used in nest building and are very much esteemed by both sexes. Unfortunately there is only a limited number of pebbles, so rather dishonest methods are often resorted to. Below is the emperor penguin, the largest of his kind.



places half a million or more are gathered together on the bare rocky shore.

As soon as they arrive the lady penguins proceed to scoop out little hollows in the stony slopes and sit in them, while the male birds strut about and bring them presents of nice little stones, which they politely lay at the ladies' feet. Or, if a penguin is too lazy to look for an attractive stone, he will just pretend to bring one, which seems to please the bird he is courting just as well! Should two penguins, as often happens, arrive with offerings—or imaginary ones—at the same nest, they are very much annoyed and at once start fighting. The angry birds beat each other furiously with

THE GRACEFUL BIRDS OF THE DEEP



Photo by N. Y. Zoological Society

Penguins are excellent swimmers, as the above picture shows. Their feathers make a good waterproof and their wings, transformed into flippers, take them

through the water at a fast pace in search of the sea life which is their food. This little fellow makes his home on the Galapagos Islands.

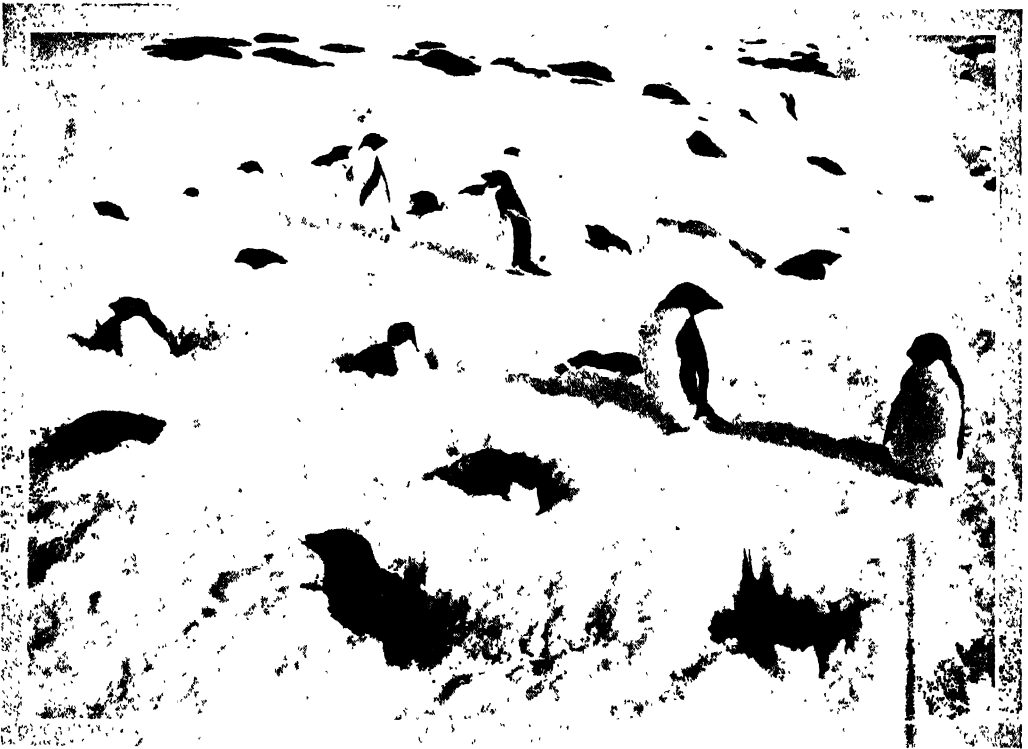


Photo by Herbert G. Ponting from "The Great White South"

A blizzard has just swept over Penguin Land and now the mothers are shaking off their thick covering of snow. Even during fierce storms these brave birds

will not desert their eggs, which they often hold on top of their feet to keep them off the snow and ice. They are most devoted parents.

THE GRACEFUL BIRDS OF THE DEEP

their flippers and do their utmost to bump each other over. But the funny things seldom appear to hurt each other very much, and after an exciting bout or two, one of the birds will march off leaving his rival in possession of the nest and the lady.

When the birds have chosen their partners they dare not leave their places in the rookery, even for a moment, until the eggs are laid. If they do another bird is almost certain to step in and annex the nest, thinking it is a better one than her own. But once the eggs are laid the birds settle down to hatch them without more ado, though even then the male penguins will sometimes neglect their duties to spar with their neighbors, while their wives sit tight on their nests and scream indignantly at their quarrelsome mates.

How Young Penguins Are Cared For

The father and mother take turns in hatching the eggs one sitting while the other goes down to the sea for a little food and recreation. And when the eggs are hatched one parent remains on guard while the other toddles down to the water to fetch food for the chicks.

But as soon as the babies are able to sit up and take notice, the father and mother allow themselves a little relaxation after all their anxious work. The children are then left in the rookeries in charge of a few trustworthy old birds while all the other grown-ups march down to the sea and enjoy themselves. There they play all sorts of jolly games, tobogganing on their chests down the slippery slopes, tumbling with a splash into the water, scrambling up on the ice floes, taking headers off them into the sea again, and having a gay good time. But they do not forget their children in the nurseries, and little processions of penguins are constantly to be seen toiling up the slopes, their crops bulging with food which they are carrying home for their own particular little ones.

When the little penguins are old enough they are allowed to accompany their elders and join in the fun. And the birds have actually been seen drilling on the ice, evidently getting ready for the day when they will all go off together for a long holiday in the open sea.

The King Penguin's Muddy Home

All the penguins, and there are many different species, live in the southern seas. The king penguins, who are nearly as big as the emperors, make their rookeries on lonely islands in the Antarctic Ocean, where it is so cold and muddy that the birds are often obliged to perch up on large stones with their eggs on their feet to keep the precious things out of the half-frozen puddles.

The smallest member of the family is the little blue penguin whose home is on the shores of New Zealand and South Australia. It is only eighteen inches tall when it stands upright on its webbed toes, and it has a pale blue feathery coat instead of the usual black or gray one worn by most of its relatives.

How Rock Hoppers Got Their Name

Then there are the rock hoppers who inhabit the Falklands and many other islands in the southern seas, as far as the coast of New Zealand. They are most quaint-looking birds, with two long yellow feathery tufts on their heads. They have gained their name from the funny way they have of putting their feet together and hopping merrily from rock to rock.

Another curious penguin is called the "jackass" because it has a peculiar cry like the braying of a donkey. It lives on the Falkland Islands, and digs out a burrow in which to lay its eggs. Jackass penguins are noisy birds. The young jackasses start braying almost as soon as they are hatched, and keep up the noise from sunrise till sundown. It is only one of the strange habits the penguins may have.

The STORY of BIRDS ---

Reading Unit No. 24

BIRDS THAT LOVE THE SNOW AND ICE

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

The horned lark, 4-223-24
The tiny kinglets, 4-224-25
An imported nuisance—the starling, 4-225-26
The blue jay, 4-226-27

The truth about the crow, 4-227-28
The butcher bird, 4-229
Ptarmigans, 4-229-30

Things to Think About

What peculiar singing habits do horned larks have?
Why are starlings unpopular?
How did starlings find their way to this country?
What are the crow's good and bad

points?
What evidence have we of the crow's intelligence?
To what peculiar habit does the butcher bird owe its name?

Picture Hunt

What may prevent a bird's freezing to death? 4-224
What accidents must small birds avoid? 4-225
How should you treat your caged

bird? 4-227
Do birds have ears? 4-228
What bird is a murderer? 4-229
What are the colors of a blue jay? Frontispiece, Vol. 4

Related Material

What other birds do farmers fear? 4-153
What is the history of the English sparrow in America? 4-25
How can you encourage winter

birds to come to your home regularly? 4-15
What other birds may you expect to see during the winter? 4-124-30

Leisure-time Activities

PROJECT NO. 1: Put up a suet basket on a tree near your home in order to attract winter birds, 4-126

PROJECT NO. 2: Study the habits of starlings if you have them in your community.

Summary Statement

In the winter we often meet horned larks, kinglets, crows, starlings, and jays. The crow

and starling have bad reputations, but both have redeeming virtues.

BIRDS THAT LOVE *the* SNOW and ICE

Riding in on the Blasts from the North Come Certain Charming Birds That We Never See in Summer. Do You Know How to Make These Winter Visitors Feel at Home?

THOUGH the first breath of autumn tells most of our feathered friends that the time has come to fly away south, we are not left desolate of bird society. Other winter visitors always come to take their place. And merry creatures they are, whose good will we can easily win by a modest offering of crumbs and grain and suet. To make their shy acquaintance is an opportunity no one should miss.

When the days grow short and the winds blow cold, we may know that it is time to look for the horned larks. They come hurrying in from their summer homes on the wind-swept prairies or among the wilds of Labrador, to spend a month or two in the stubble fields, pastures, and plowed lands of most of the United States. The jolly little brown birds hope to be able to pick up a scanty living and keep life in their small bodies until spring comes back once more.

It is no use looking for horned larks in the woods and thickets. They are accustomed to wide, open spaces and do not like to be shut in by trees. But when the snow lies deep in the fields and meadows, covering up the food supplies, scattered flocks of them may be seen flitting up and down the country roads and bypaths or round about barns and haystacks, eagerly hunting for a few seeds or grains of corn.

Horned larks are sturdily built, broad-shouldered little birds, not so big as a robin. Their coats are a pinkish brown, with paler waistcoats, and the male birds have bright yellow throats, black bibs,

and two tufts of black feathers on the head. These stand up like little pointed ears when the birds are excited. The well-behaved little visitors spend the wintry days creeping quietly about the weed patches in a mousy fashion, picking up food here and there. If you disturb them they give a plaintive little whistle, rise from the ground, fly a little way, and then settle down again in a fresh spot.

You may hear the horned larks whistling and calling softly one to another as they move about on the ground, but to hear their true song one must visit them in their breezy home in the springtime. Then, while his demure

little mate is busying herself about her nest, or is already sitting on her eggs, the male bird mounts into the air, up and up in a wide spiral until he is almost lost to sight in the blue of the sky. There he hovers and pours out his heart in a song of gladness. Then, closing his wings, the lark suddenly plunges headlong back to earth! You hold your breath, thinking he must surely be dashed to death against the

ground. But no! At the last moment the singer spreads his wings again and alights safe and sound.

The prairie horned lark is the better singer. His song, although it cannot be compared with the thrilling song of the European skylark, is very sprightly and pleasing. His Labrador cousin has rather a shrill and squeaky voice, but nevertheless sounds very happy and well pleased with himself when singing up aloft, and he indulges in the same crazy exhibition



Photo by Olivier, Paris

BIRDS THAT LOVE THE SNOW AND ICE

of trick flying when he comes down to earth again.

The prairie horned lark is most common in the states of the interior in winter time. The birds from Labrador visit chiefly the eastern and coastal districts, and may often be seen running about near the shores of the Atlantic.

Among the most charming of our winter visitors are the kinglets. In mid-autumn, when nearly all the bird world is on the wing, moving south to winter quarters before the days grow too cold for traveling in comfort, we must watch for the wee royal birds. Any day in October we may hear a stream of soft, warbling notes coming from the trees in the orchard, or the spruces in the grove, or shrubbery.

Look up, and there, popping about the branches and swinging on the slenderest twigs, are a company of the sweetest little feathered folk in the world! At first you might mistake these airy sprites for warblers or titmice. But no, the warblers have left us; nor are these little birds so bold and jaunty as our faithful little friend, the black-capped chickadee. They are smaller, too, than the chickadees. Kinglets are among the very smallest of North American birds. The ruby-throated hummingbird, who visits us in the summer, is the tiniest of all; then come the kinglets, who are just a shade

over four inches in length—tail and all!

If these wee birds wear a fiery crown of golden-orange or yellow feathers on the top of their heads, you may know they are golden-crowned kinglets.

The males have the golden crowns, their mates the yellow ones. But if some have a crimson crown and others none at all, then they are ruby-crowned kinglets and their consorts.

The golden-crowned birds are likely to stay with us all winter, as they are regular cold-weather visitors in most of the states. They spend nearly all

their time popping about the tree tops, trilling and calling "teezee, teezee, teezee!" as they hunt excitedly for tiny insects hidden in the leaf buds and cracks and crannies of the twigs. These light and airy little hunters do an immense amount of good in the orchards and shrubberies during their stay with us. They are so small that they can cling to the slenderest twig, and while tossing in the breeze pick off

tiny insects from the buds growing right at the tip—which bigger birds cannot do.

The ruby-crowned kinglet spends Christmas further south than the "golden-crown," and usually makes only a short stay in the northern states as he passes through. In April, or



Photo by American Museum of Natural History

Meadow larks are hardy birds. We may sometimes see them in midwinter, when most wild things have vanished. Just to show that they don't mind the weather, they may even utter a pretty little song. If birds have enough to eat, they never die of cold. Remember this when everything is frozen and the snow lies deep next winter!

The American pipit breeds in Arctic America and visits the United States only in winter. A closely related species is the only land bird found on the Antarctic continent. Of course it goes there only to breed, but even the summers are not — in the Antarctic!

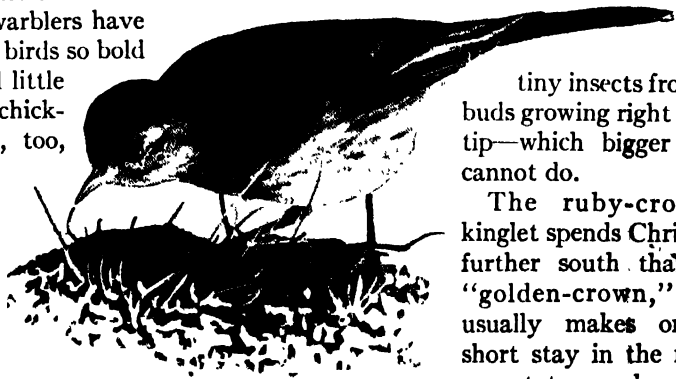


Photo by American Museum of Natural History

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early in May, back he comes again, singing his way home through the tree tops. For this tiny bird has a golden voice, and he sings about the happy summer days to come to cheer himself on his way.

Both the little kinglets weave the daintiest of mossy cradles at the top of the tall trees in the evergreen forests in the north; these little homes often swing, in a network of firm twigs, sixty feet or more above the ground. The golden-crown spends summer in Canada, or the most northern states on the Canadian border. The ruby-crown may fly as far as Alaska, or he may make his home on the wooded slopes of the mountain ranges of the United States.

Winter is a good time, not only to make new friends among the birds who come from the frozen northern regions to visit us, but to become better acquainted with our permanent feathered neighbors--whom perhaps we have not taken much notice of in the summer days, while our summer guests are with us.

Many birds are quite changed in character in winter time. During a long spell of bitter weather the shyest birds will often grow tame; and bold and independent birds who have held aloof in times of plenty will come into the garden to seek food when heavy falls of snow or hard frosts cut off their supplies.

Birds That Put on a Winter Dress

Many birds, too, are so changed in appearance that we hardly know them in their winter dress. The starlings that flaunted so gaily in the springtime in glossy suits shot with green and purple, now in their spotted winter plumage look entirely different. But one can hardly mistake a starling with its long yellow bill, its short legs and tail, and

the funny way it has of zigzagging about the lawn with a half strutting, half waddling gait.

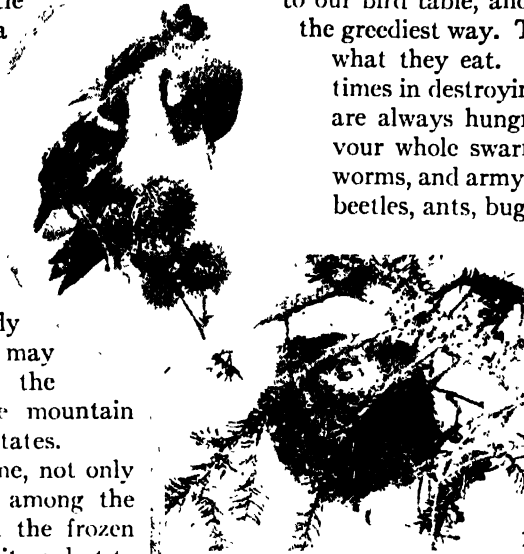
The Bad Manners of the Starlings

Starlings, it must be confessed, have very bad manners. They quarrel and fight, push and jostle other birds about when they come to our bird table, and gobble up the food in the greediest way. They do not mind much what they eat. They are useful sometimes in destroying insect pests, for they are always hungry, and ravenously devour whole swarms of caterpillars, cutworms, and army worms, besides locusts, beetles, ants, bugs, flies, and grubs of all

descriptions. On the other hand, the greedy birds are a great nuisance; for they raid the orchards, strip the cherry trees, and peck holes in the apples, pears, and peaches. They will descend in a cloud on fields and gardens, and clear off whole crops of peas and beans and young vegetables of any kind. They are just as mischievous as they well can be.

In the autumn starlings gather together in enormous flocks. They fly about the country together, and thousands often go to roost in the same place night after night. Sometimes they choose a church tower or the top of some other high building. Sometimes they settle themselves all along the branches of a big tree. And what a noise and commotion they make when they are going to bed—all whistling, gurgling, squawking, and chattering as they rudely push and shoulder one another out of the way and try to get the best places.

Starlings are not native birds. They were brought over to America from Europe as lately as 1890 and set free in Central Park, New York City. Since then, like the English



Photos by Cordelia J. Stanwood and American Museum of Natural History

If it had not been for the camera man, the little kinglet in the oval would have died a slow death, for she could not have freed herself from the thistles. Small birds are occasionally caught in this manner. In the square is the nest of a golden-crowned kinglet; it is lined with squirrel hair and feathers.

BIRDS THAT LOVE THE SNOW AND ICE

soarrows, they have made themselves thoroughly at home in most parts of the United States, and have even spread to

Photo by American Museum of Natural History

The American magpie is found in the western part of the United States. As you might suspect, he belongs to the family of crows and jays and like them is always playing pranks, but he does not enjoy cold weather.

Canada. They are such strong, wiry birds that they can hold their own almost everywhere. But although they are often a nuisance, they are most intelligent and amusing. They are wonderful mimics. Not only do they imitate the songs and calls of a good many other birds—such as the robin, catbird, blackbird, goldfinch, chickadee, woodpecker, bobwhite, and the swallow—but they will sometimes mimic the peeping of the chickens in the poultry yard, the mewing of a cat, and the barking of a dog!

The blue jay is a bird we know better in late autumn and winter days. He is a woodland bird. In summer he keeps his distance, and the flash of his bright wings as he darts through the trees and his harsh cry ringing through the woods are the only sign we are likely to have that this fine bold bird is about—though we may perhaps pick up a blue feather, barred with black and spotted with white, which he has shed from wing or tail in his flight.

A handsome fellow is the jay, with a bold air and upstanding carriage. His back is bright purplish blue, his breast soft gray. A black band below his throat runs up the side of his head to join a fine crest of blue feathers which usually stands proudly erect upon his crown.

The Ways of the Clever Blue Jay

In the springtime, when all the birds are singing, the jay whistles away with the best of them. But his voice, though loud, is not very musical, and when he is startled or annoyed he simply screams. He is a clever mimic, too, and often amuses himself by imitating the notes of other birds in the neighborhood.

The jay is no favorite among the nesting birds in the wood, for he is a thief as well as a bully. He steals the eggs of smaller birds and is even suspected of killing their young ones. Nevertheless the jay is very devoted to his own nestlings, and takes almost the entire responsibility of feed-

Photos by National Park Service and American Museum of Natural History

The blue-fronted jay, in the circle, is wondering whether it is better to fight the camera man or protect her eggs. She makes her home in the far West. Below her is the familiar blue jay. You will have to admit that he is a handsome fellow, even though you may detest his noisy screeching.



ing them upon his own shoulders, while his mate stays at home to brood and guard her babies.

When summer time is over, the blue jay mends his ways. There are now no more eggs to steal, and the young birds have all flown from their nests; so the rascal stops persecuting his weaker neighbors, and joining

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a roving band of friends and relatives, he flies about the country, feasting on beech-nuts, chestnuts, acorns, and the seeds of berries of all sorts of trees and shrubs that are plentiful at this time of year.

But when the autumn harvest of nuts and berries is over and winter holds the world in a stern grip, then the poor jays have a hard time. The trees are bare, all food is used up, and like other brave feathered folk the proud blue birds are often weak and hungry. Then the jays will sometimes draw near to the farms and homesteads in the country, hoping to pick up a few grains of food to keep them from starvation. Yet even then, no matter how hungry they are, it is hard to coax jays to come to our window sills for a free meal. But if when we have seen the birds about we scatter cracked nuts and corn in the garden under the trees, they will probably come down and help themselves when they think no one is looking.

Another bird who is with us all the year round but attracts our attention far more in cold, wintry weather is "Jim Crow."

In summer, when the trees are thickly covered with leaves and the fields full of waving corn or grasses, we may pass him by many a time unnoticed—unless he opens his beak and gives himself away by a loud,

startling "c-a-w!" But in winter, when the crow is perched aloft among the bare branches of the wayside trees, or is stalking about on the snow-covered ground, we cannot fail to see the big black fellow.

He is nineteen inches long from the tip of his stout beak to the end of his square-cut tail. He has a bold, bright, wicked-looking eye; and he is black, jet-black, all over, beak, legs, feet, and all.

Among farmers old "Jim Crow" has few friends. His naughty trick of pulling up sprouting corn as soon as the green shoots have pushed their way above the ground makes the farmers very bitter against him. He does this to get the grains of seed corn from which the blades are sprouting; for being buried in the earth has made the grain soft and sweet—such a delicious morsel that the crow simply can't resist it. A party of perhaps twenty or thirty crows will pull up row after row of young corn, quite spoiling the crop in an unbelievably short time. And to

make matters more exasperating, the cunning birds almost always have one of their number posted as a sentinel, on the top of a tree or a fence, to keep watch while the others are feeding. Then, directly the angry farmer appears

upon the scene with his gun, the sentinel crow warns his friends with a loud "Caw, caw!" and in a moment the rascals are all in the air making for cover in the nearest wood.

Besides robbing the farmers' fields crows sometimes steal young chickens from the poultry yard, and like their cousins the blue jays they eat the eggs and kill the nestlings of other birds. So they really do deserve most of the hard things said about them.

Still, we must be just to Jim Crow. He



Photo by N. Y. Zoological Society

Lack of pigment, or coloring matter, is not uncommon in birds. For instance, it accounts for the fact that this crow is white—or, as we say, is an "albino." Caged birds will probably not develop feather trouble if they are fed cuttlefish and lettuce. Keep them healthy by giving them plenty of fresh air, but do not hang them in drafts. Sun is an excellent tonic, but do not bake your bird.

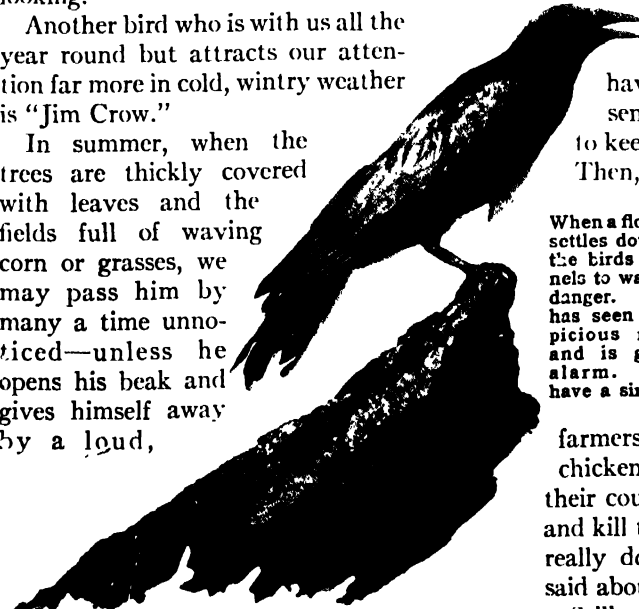


Photo by N. Y. Zoological Society

When a flock of crows settles down to feed, the birds post sentinels to warn them of danger. This crow has seen some suspicious movement and is giving the alarm. Starlings have a similar habit.

BIRDS THAT LOVE THE SNOW AND ICE

is not altogether a bad bird. If he sometimes damages the young growing corn, he also does good by helping to clear the ground of all sorts of harmful insects when they are turned up by the plough. In the spring-time, too, and in early summer crows feed their babies chiefly upon a diet of insect food, besides eating a great many May beetles, June bugs, locusts, and grasshoppers themselves.

Crows start building their nests very early in the year, before the leaves are fully out on the trees. The nests are large, bulky affairs made of twigs and sticks and lined with bark from grapevines, with grass, and sometimes with moss. The wise old birds are very quiet while they are busy about the nest and while the mother crow is sitting on her eggs; but the young crows when they are hatched are very noisy. You can hear them squawking away up in the tree tops while their parents are out hunting for food.

In the autumn and winter enormous numbers of crows collect together. Hundreds, sometimes thousands, regularly go to roost in the same thicket or clump of trees. In the daytime the birds go off by themselves or in little parties and fly about scouring the

country for food. Then in late afternoon they all come trooping home again. High above the tree tops you see them hurrying in from all directions. Each new contingent

as it arrives is greeted with a chorus of "caws!" and great is the commotion, and probably the quarreling, that goes on until they all settle down and go to sleep.

If Jim Crow is a bit of a rascal, he is a very clever one. Crows are the most intelligent of all the perching birds. They know

well how to take care of themselves, and in spite of the war constantly waged against them by farmers with guns, traps, and poison, crows still flourish bravely throughout the length and breadth of the land. In winter, although they suffer from extreme cold like other birds, crows do not easily die from

lack of food. For they will eat anything, frozen apples, pumpkins, potatoes, or scraps of any sort that they find lying about; and when all other food fails they

will dine upon a dead animal—such as a rabbit, cat, or horse—if they can find one lying on the ground.

Flocks of crows often go down to the seashore, too, and joining company with their cousins the "fish crows," feast on dead fish washed up on the shore.



Photo by A. A. Allen

In winter crows usually travel in flocks. Those above do not seem to mind the cold.



Photo by Cordelia J. Stanwood

This young crow is now one week old, and as yet has no feathers. The opening of his ear can be plainly seen, behind his closed eye. Note the very large bill.

BIRDS THAT LOVE THE SNOW AND ICE

An interesting winter bird who visits the northern and middle states when the weather up in Alaska and Northern Canada grows too cold to be pleasant, is the northern shrike, or butcher bird—a sturdily built white and gray bird, rather bigger than a robin, with a big head, a hooked beak, and a wicked-looking eye. You may take him for a hawk, when you catch sight of him perched on the top of a telegraph pole or on the very tiptop of a tall tree.

But the shrike is not a hawk. He is really one of the perching birds, or song birds, as we often call them; although in his appearance and in his ways he is much more like a bird of prey.

A fierce, bold hunter is this butcher bird. He preys on mice, small birds, and large insects, and has the curious habit of impaling his victims on sharp thorns or the barbs of a wire fence before he proceeds to tear them to pieces and eat them. In his northern home, when food is plentiful, this strange bird often makes a genuine larder of a thorn bush or tree not far from his nest; there, fixed on the big thorns, he keeps small mice, birds, big bees, and beetles, all ready for him whenever he is hungry.

The "great gray shrike" is the largest of the butcher birds. Smaller species belonging to this peculiar bird family, found in the United States and various parts of the world, feed chiefly on insects, although they have the same strange habit of impaling their victims on thorns for future use.

Most game birds are very hardy, able to brave almost any kind of weather. The grouse manage, as a rule, to pick up a scanty living

of berries and seeds even in the severest weather, and will tunnel under deep snow to reach their food supplies. Game birds that live on the mountains will descend to valleys when winter sets in, and arctic birds usually move further south, though not far enough to escape from the intense cold of the northern winter.

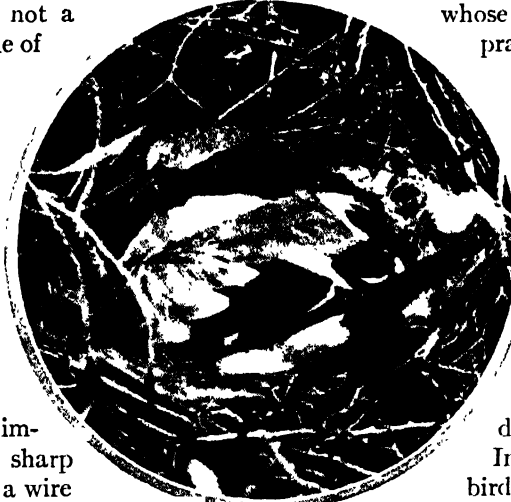
One of the most interesting of the game birds belonging to the grouse family is the willow ptarmigan (*tär'mī-gān*), whose home is on the arctic prairie land called the tundra, which extends across North America from Labrador to Western Alaska. This bird moults its feathers three times a year—instead of twice, as is the general rule in birdland—and after each change appears in a suit of an entirely different color.

In the springtime the cock bird wears a handsome dress of chestnut-brown and white; in the summer a mottled plumage of brown, buff, and black; then in the winter, with the exception of some black tail feathers, he is clothed in white from head to foot. The hen ptarmigan change their costumes, too, but their spring plumage is not so striking as their mates'.

This change of color is a great protection to the ptarmigan, and often saves them from falling victims to the arctic fox, the weasel, and the sharp-eyed eagles and hawks of the arctic regions.

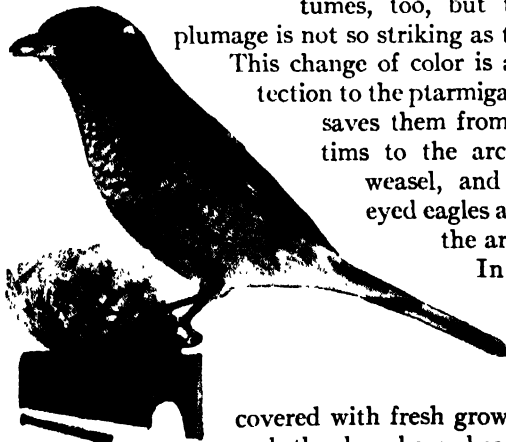
In the short northern summer, when the tundra is

covered with fresh growths of moss and the low berry-bearing shrubs



Photos by A. A. Allen

Shrikes have a reputation for killing smaller birds and impaling the bodies of their prey upon convenient thorns. Because of this uncivilized habit they are called "butcher birds." The northern shrike above is sitting on her nest. The loggerhead shrike, below, is a smaller variety, and is found in the southern states.



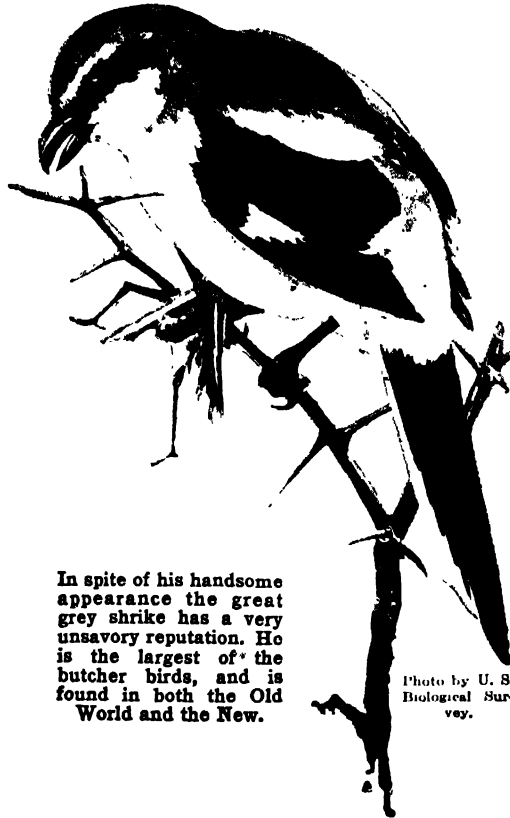
BIRDS THAT LOVE THE SNOW AND ICE

which grow in this desolate part of the world are in leaf, the ptarmigan in their quiet mottled plumage are not at all easy to see. In winter, when everything is covered with snow, the birds are practically invisible in their winter dresses. And so, both in summer and winter, the color of their feathers often saves them from hungry enemies who are always looking out for prey.

Northern winters are so long and so bitterly cold that it seems a wonder that any bird or beast can live through them. Yet most of the hardy arctic creatures—there are not very many of them—do manage to exist in that unfriendly land of ice and snow. But they have a very hard time. Sometimes

for days together the ptarmigan are buried up to their neck in the snow, with only their beaks above the smooth white blanket. And the only food the poor birds can find to eat is the buds and tender twigs of the dwarf alders, birches, and alders whose branches stick up through the snow.

Besides the willow ptarmigan there are other species in Northern America: the rock ptarmigan, which lives in the snow-covered mountains in the north, and the white-tailed ptarmigan, whose home is in the summits of the Rockies. All the birds are clad in white in winter, and for this reason and because they live most of the year amid the snow, are sometimes called snow grouse.



In spite of his handsome appearance the great grey shrike has a very unsavory reputation. He is the largest of the butcher birds, and is found in both the Old World and the New.

Photo by U. S.
Biological Survey.

The STORY of BIRDS

Reading Unit No. 25

BIRDS THAT HAVE FORGOTTEN HOW TO FLY

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

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tured, 4-235
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The kiwi that lays big eggs, 4-238-39

Things to Think About

What enables a bird to fly?
Why does an ostrich associate with zebras and antelopes?
What is the diet of an ostrich?
What is a bolas?

How far has the kiwi degenerated as a bird?
What bird lays the largest egg in proportion to its size?

Picture Hunt

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How fast can an ostrich run? 4-234
Were emus always unable to fly? 4-236

What extinct birds laid enormous eggs? 4-237
How much does the egg of a six-pound kiwi weigh? 4-238
What is the origin of the phrase, "as dead as a dodo"? 4-239

Related Material

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What strange beasts might an Australian emu encounter? 4-459-72
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Summary Statement

The ability to fly is not universal among birds. The ostrich, emu, cassowary, and kiwi have

lost this ability but make up for it by having powerful running legs.

BIRDS THAT HAVE FORGOTTEN HOW TO FLY

Here is a young ostrich and an egg which contains one of its sisters or brothers that has not yet made its debut. Ostrich eggs are about eighteen times larger than hens' eggs. It takes forty minutes to boil them hard; and they are said to be delicious in flavor.



Photo by Nature Magazine

A mother ostrich very sensibly wears a costume of sober gray, which makes her quite inconspicuous when she is watching her eggs in the daytime. In the evening the male ostrich, whose rich black coat is almost invisible at night, takes charge of the family.

BIRDS *that* HAVE FORGOTTEN HOW *to* FLY

This Will Tell You of the Strange Birds That Take to Their Legs instead of Using Their Wings

BEFORE we say good-by to birdland we must not forget to pay our respects to the great flightless birds—the ostriches, rheas, emus, and cassowaries. For these important inhabitants of the feathered world are of very ancient lineage, the descendants of gigantic birds who lived long, long ago, when all manner of strange and terrifying creatures roamed over the earth.

These birds have very small wings, quite useless for flying, though it is thought that their ancestors had large, serviceable wings and could fly like other birds. Perhaps because these great, strong birds had few enemies to fear and so were not constantly having to flee for their lives, and also because, perhaps, they had not far to go to seek for food, the birds grew lazy and seldom troubled to use their wings. So as time went on their wings gradually dwindled in

size and their flying muscles grew weaker and smaller, until at last the birds lost the power of flight altogether.

All birds that fly have a broad breastbone, with a ridge upon it like the keel of a boat. To this ridge are attached the strong muscles by means of which the bird moves its wings. Even penguins, whose wings have become changed to flippers, have this keel-shaped breastbone, for they fly through the water instead of through the air, and need strong muscles to move their flipper-wings. So penguins are classed with the flying birds.

But the flightless birds are flat-breasted, and their breastbone has no keel. Their small wings are no good at all to fly with, though they are sometimes used as sails when the birds are running, to help get up speed. All these big birds are champion runners, with remarkably strong, stout legs; so they are often called "running birds."

BIRDS THAT HAVE FORGOTTEN HOW TO FLY

The ostrich has the distinction of being the largest living bird, though not so very many years ago, as time is counted in such matters, the ostrich was obliged to take second place. That was when the giant moa (mō'ā) was still running in the wilds of New Zealand. The moa, a splendid bird with a small head and stout legs very much like the ostrich's, stood twelve feet high on his toes. But the last of these huge birds was killed some four hundred years ago; so the ostrich is now the largest of all birds.

A full-grown cock ostrich is taller than a tall man. He stands quite eight feet high if you measure him from his toes to the crown of his head; and his legs are as stout and as strong as the legs of a horse. So a kick from an ostrich is anything but a joke!

One very strange thing about the bird is that he has only two toes, both of them turned forward. They are strong and thick and armed with short, broad claws, while underneath they are padded with thick, soft, elastic cushions. When he walks the ostrich takes elegant, mincing steps, as if he were about to dance; but when he runs he speeds over the ground with enormous strides, going at such a rate that if he ran straight no horse could overtake him. But the ostrich doesn't run straight. He always runs in a wide circle. So a hunter on a good horse can cut him off and lasso him.

These great birds are natives of Africa. There they roam over the prairies or the hot sandy deserts, sometimes, strange to say, in company with herds of zebras and antelopes. These curiously assorted creatures apparently gather together for mutual protection against their common enemy, the fierce African lion. Large troops, of course, are not so likely to be attacked as solitary individuals, while the different kinds of creatures in the troop have different ways of detecting danger. The zebras and antelopes have very keen scent and are quickly aware when an enemy is lurking near in ambush, while the tall ostriches with their sharp sight can keep a wide lookout over the heads of their four-footed companions and see the lion approaching from afar. So in one way and another this odd company may often be saved from an unpleasant surprise. At the first alarm away they all go stampeding helter-skelter for safety—antelopes, zebras, and ostriches all flying together.

As a general rule, however, ostriches go about in flocks, or more often in family parties consisting of a full-grown cock ostrich and five or six hens. The hens are not so imposing as their mates. They wear dull gray instead of striking black and white plumes, and are not quite so tall.

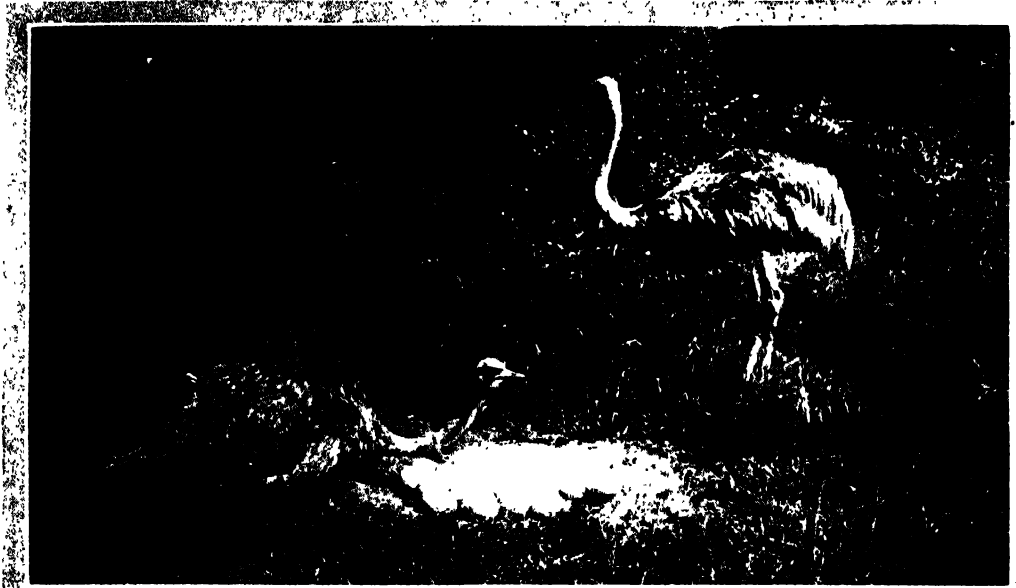
Cock ostriches are rather quarrelsome. They will fight fiercely when the flocks break

On California ostrich farms, such as this one at Los Angeles, the birds live almost entirely on oranges. That is the prize for which our ostrich is waiting while it allows the handsome plumes on its wing to be displayed. The ostrich eggs, which weigh between three and four pounds each, are hatched in an incubator and must be kept there for forty-two days before the chicks appear.

From Philip Gendreau, N. Y.



BIRDS THAT HAVE FORGOTTEN HOW TO FLY



Photos by N. Y. Zoological Society and American Museum of Natural History

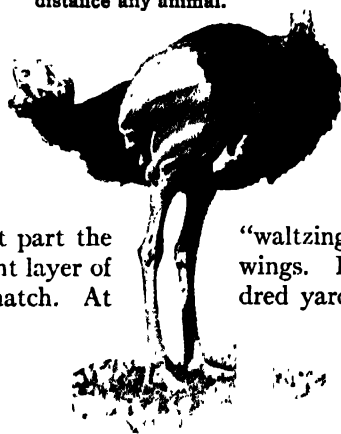
Does the knee of the ostrich above bend in the same direction as yours - and the knee of the rhea, shown on the opposite page? They do. But the knee is covered by body feathers, and the joint you see is the ankle.

up into family parties and each proud bird is trying to persuade as many hens as he can to follow him. But the hens are more peaceful in disposition. Five or six wives will live quite happily together, with one cock to protect them, and they will all lay their eggs in the same nest in the friendliest fashion.

As many as twenty or thirty eggs are sometimes deposited in one of these communal nests, which are merely large, shallow depressions scooped out in the warm sand.

Once the eggs are laid, the hens trouble themselves little about them, for in hot, burning climates very little brooding is necessary. One or another of the birds will sometimes sit in the daytime, but for the most part the eggs are covered up with a light layer of sand and left for the sun to hatch. At night, however, the nest cannot be left unprotected, and this important duty is always undertaken by Father Ostrich,

This handsome ostrich comes from the Sudan, in Africa. If you could see him take to his swift legs, you would laugh at the silly story that when in danger he hides his head in the sand. Given a chance to run, he can outdistance any animal.



Both birds are among the swiftest of all creatures. The ostrich can go as fast as a mile a minute. The mother ostrich above is guarding her eggs. The father will take over the task at night.

who sits on the eggs to keep them warm and guard them from jackals and other prowling marauders until the sun is up again.

When the young ostriches are growing up they join one of the "camping parties," and fifty or sixty birds, both young ones and old ones, may sometimes be seen wander-

ing about the open plains together. Young ostriches are strangely silent, but the old cock birds rouse the camp in the early hours of the morning by uttering loud cries, which some travelers say are like the roaring of a lion and others compare to the bellowing of a bull.

All the birds are very sprightly in the fresh morning air, and often start the day by "waltzing" to exercise their legs and wings. First they run forward a hundred yards or so at a great pace; then, holding out their short feathery wings, which remind one of the fluffy skirts of ballet dancers, they all spin round and round

BIRDS THAT HAVE FORGOTTEN HOW TO FLY

on their toes until they are quite giddy. Some of the young and foolish birds often go on waltzing round till they tumble down, and occasionally one of them ends its wild dance with a broken leg!

When out on the plains leading a natural life ostriches live chiefly on grass, green leaves, berries, fruits, and seeds; though they will occasionally snap up small birds and beasts, lizards, snakes, and insects; and they swallow great quantities of grit and small stones to help them grind up and digest their food—just as fowls do. But ostriches are rather stupid birds, and when they are kept in pens and paddocks they will swallow anything you happen to offer them.

The consequence is that thoughtless people often give the unfortunate birds all sorts of extraordinary and harmful things which in the end sometimes kill them. One ostrich of the London zoo was found to have a crop full of nails, buttons and coins, a handkerchief, three odd gloves, a clock key, a brass chain, the air valve of a bicycle tube, a collar stud, besides several yards of string and copper wire. Some foolish people may think it funny to see an ostrich bolt things of this sort, but it is cruel sport. No wonder the poor bird died of indigestion!

Why Ostriches Are Raised on Farms

There are many ostrich farms in South Africa, where the birds are kept and tended for the sake of their wonderful plumes. There are also ostrich farms in Australia, California, Arizona, and several other parts of the world to which the birds have been introduced. They were first shipped to North America from Cape Town toward the end of the last century, but it was some years before they were happily established in their new homes and the feather industry

could begin to flourish. It is not at all cruel to pluck an ostrich's feathers; when it is done properly it does the bird no harm, neither does it give him pain. On an ostrich farm the best plumes are carefully clipped twice a year, and new feathers soon grow to replace them.

The rhea (*rē'a*), or American ostrich, sometimes called, is a native of

South America; but although it bears a striking resemblance to the African ostrich, the two birds are not so closely related as one might suppose. The rhea is a good deal smaller than the true ostrich, and it has three toes on its feet instead of only two. Its wings, although rather larger than the African giant's, are never used in flight; but if, when it is

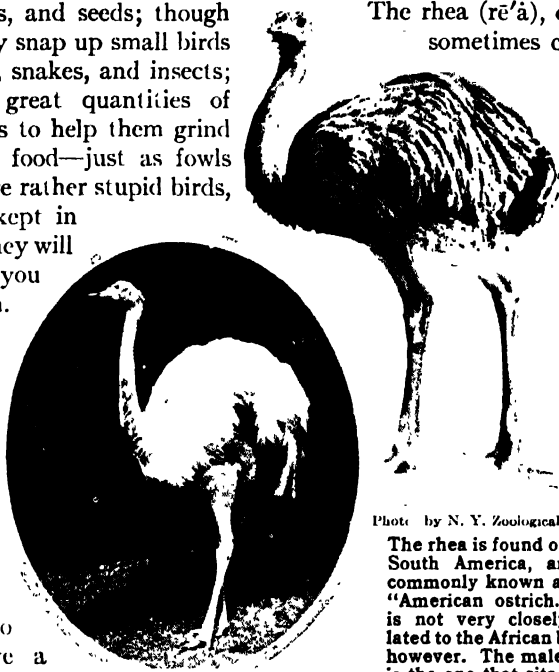


Photo. by N. Y. Zoological Society
The rhea is found only in South America, and is commonly known as the "American ostrich." It is not very closely related to the African birds, however. The male bird is the one that sits upon the eggs.

being hunted, a strong breeze is blowing, the bird will raise one wing to act as a sail. With this help, in addition to its long legs, it speeds along at such a terrific pace that no horse or dog can possibly come up with it. The natives and Indians of South America hunt the rhea on horseback with the bolas. Their only chance of catching this champion runner is by wearing it down, and they often chase it for an hour and a half before it slackens its speed.

The bolas, as you may know, is a long thong of leather with a leather-covered stone attached to each end. The hunter holds one of the balls in his hand, whirls the other round his head, and suddenly releases them both. The thing goes whizzing through the air, winds itself round the bird's legs, and brings it to the ground. The rhea is hunted for the sake of its feathers, which are valu-

BIRDS THAT HAVE FORGOTTEN HOW TO FLY



Photo by N. Y. Zoological Society

This is a mother emu and her twins. Her home is in Australia, with other primitive creatures such as the

able, although not so fine as the ostrich's. For some years back such large numbers of these birds have been killed in this ruthless way that unless something is done to protect them, there is danger that before very long the rhea will become extinct—like the giant moa of New Zealand.

How Rheas Live

Rheas live in much the same way as ostriches do. Five, six, or seven hens keep company with one cock and lay their eggs all in the same nest. But female rheas are even more easy-going than ostriches are. They do not sit on their eggs at all, even in the daytime. Perhaps with one nest among so many hens they would never be able to agree as to whose turn it was to sit. So they will have nothing to do with it, and the male rhea is obliged to undertake the whole business himself.

And a very good father the bird is, too. He never neglects his duty, and he fiercely attacks anyone who dares to come near his nest. When the eggs are hatched he walks

kangaroo and duckbill. It is thought that flightless birds had ancestors that flew like other birds.

about proudly with his brood of chicks running round him, and he watches over the little things until they are able to take care of themselves.

Rheas live out in the open country on the treeless plains of the South American pampas, where there is nothing except clumps of tall grasses to hide them from the eyes of the hunter or their sworn enemy, the great catlike puma. Yet fine, big birds as they are, in their native haunts rheas are extraordinarily difficult to discover; they seem to fade away out of sight in the most mysterious manner. This is because their pale, bluish-gray plumage is almost exactly the color of the distant haze; so when they are standing up against the light, the birds are almost invisible.

Two Great Birds of Australia

The emu (é'mū) and the cassowary (kās'ō-wā-rī) are Australian birds. The emu lives only on the mainland, but the cassowary is also found in New Guinea and a few small neighboring islands.

BIRDS THAT HAVE FORGOTTEN HOW TO FLY



Photo by Government of New Zealand

The eggs above belong to the Aepyornis, the ostrich, and the moa. The small one is a hen's egg. The Aepyornis (é'pi-br'nis) once lived on the island of

Madagascar; the moa inhabited Australia and New Zealand. Both are now extinct. These giants were eaten by the early inhabitants of New Zealand.

Like the ostrich and the rhea the emu is a bird of the open country. It haunts the great plains and open forest lands, where on its big, strong legs it rivals the great kangaroo in the terrific speed with which it covers the ground when it happens to be in a hurry. No hunter on the swiftest horse could hope to overtake the emu in a fair chase over level ground, at least not until the bird is thoroughly exhausted. And when he is brought to a standstill he kicks out so viciously with his powerful legs that it is very dangerous to go near him. The emu kicks out backward and sideways, like a cow, instead of forward, as the ostrich does.

In height the emu is second only to the ostrich. It is rather a dowdy-looking bird,

clad in a suit of mottled brownish feathers which are so long and fine that they are almost like hairs. The male and female emu are dressed alike, but the hen bird has a peculiar throat pouch which at nesting time she is in the habit of inflating—giving utterance when she does so to a loud, booming note which sounds somewhat like a muffled drum. Curiously enough, the cock bird is smaller than his mate, and is quieter and more gentle in his behavior. He is the better runner of the two, however, and when he is roused to anger he expresses his annoyance by a hiss or a kind of low grunt.

Here is another variety of primitive bird, the cassowary of Australia. That continent is the home of a great number of "living fossils," but with the coming of dogs and men these interesting creatures are fast becoming extinct.

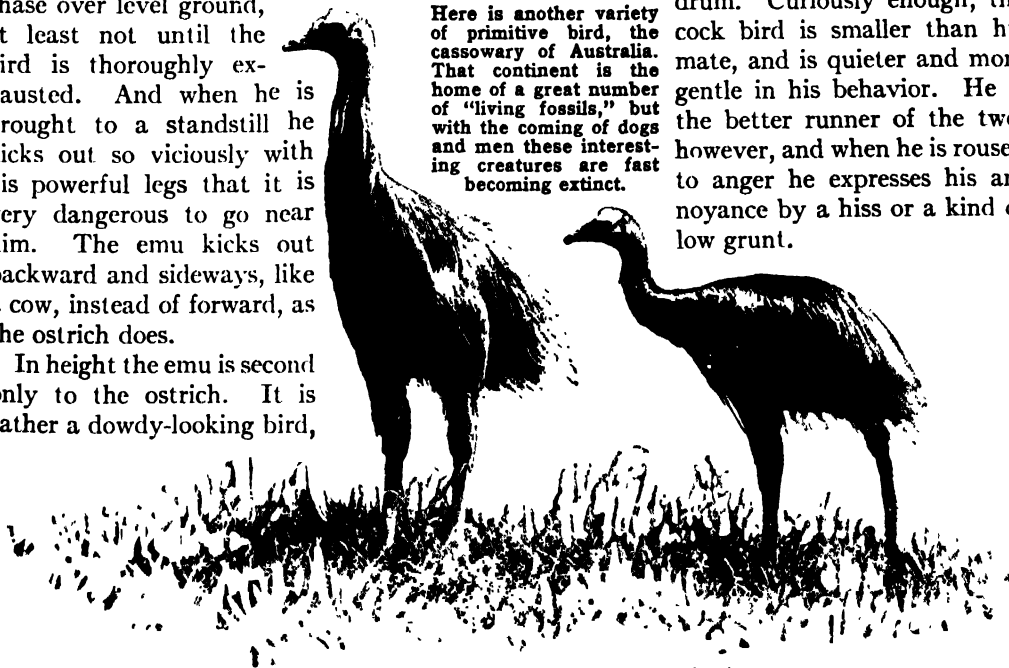


Photo by N. Y. Zoological Society

BIRDS THAT HAVE FORGOTTEN HOW TO FLY

Like other flightless birds, it is Father Emu who hatches the eggs and cares for the baby chicks. They are funny little things in fluffy striped coats, and for some time they trot about after their parents pecking up seeds and small insects. Then, when they have eaten all they can, they squat upon the ground and start preening their downy feathers.

Emus, like most flightless birds, are fond of the water. They will stand in it right up to their necks when they have the chance, and in their native wilds will occasionally swim right across a deep river. Tame emus kept in a park or large paddock are very inquisitive. They follow

just as the emu's are; and on his inner toe—he has three toes, by the way—is a huge sharp nail which makes a most fearsome weapon when he fights, as he often does.

No one seems to know a great deal about the cassowary, or how he spends his days in his wild forest home. But everyone agrees that he is a fierce fellow, especially when he is wounded;

for on more than one occasion a wounded cassowary has attacked a traveler so savagely that the man was forced to clamber up a tree for safety. The cocks, too, are known to fight together furiously at times, kicking forward and downward, each helmeted combatant trying to get in a deadly blow with his special cutting claw. They are also said to indulge in a

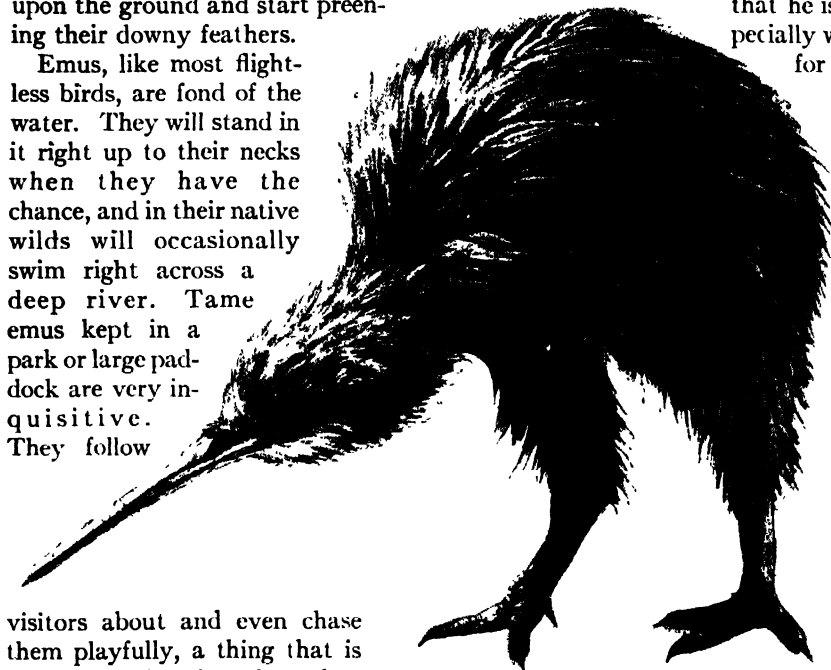


Photo by Government of New Zealand

visitors about and even chase them playfully, a thing that is somewhat alarming; but they are very seldom vicious except at nesting time.

The cassowary, unlike others of his kind, is a bird of the forests and jungles. The cock stands about five feet tall; he is a heavily built bird, with legs that are shorter than the emu's, though they are very stout and strong, just right for crashing through the tangled bushes and undergrowth of his native forests. On his head he wears a large black horny helmet, which no doubt he finds a great protection from thorns. It must save him many a nasty scratch. In every way the cassowary is a most curious-looking bird. In addition to his queer helmet he has a pair of brilliantly colored wattles dangling from his throat, while the bare skin in his face and neck is bright scarlet, yellow, and purplish blue. His coat is dark, and his feathers are fine and hairy,

The kiwi of New Zealand is not much of a bird; he has no tail or wings. But since he has feathers we must give him the benefit of the doubt. The mother lays an egg one third of her weight, and then the male hatches it for her.

mad kind of war dance round any strange object which happens to excite their hostility.

Last of the flightless birds comes the funny little kiwi (kē'wī). He is much the smallest of his race, being no bigger than a good-sized hen, and he is one of the oddest little creatures you have ever seen. His wings are so tiny that he appears to have none at all, for all that remains of them are two little flaps which are completely hidden under the mantle of hairy feathers which clothes his stout little body. The kiwi's legs are remarkably stout and sturdy, and he can kick with them as vigorously as his cousin, the giant ostrich. He has not even the remnants of a tail. His beak is very long and slender, with his nostrils at the very tip of it; and at the base of his beak, where one would expect his nostrils to be,

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tufts of long, fine bristles stick out in all directions.

This strange bird is to be found only on the islands of New Zealand, but one very seldom sees him about, even there, for the kiwi is extremely shy and hides himself away in the daytime in holes in the ground, usually among the roots of a big tree. At dusk he comes forth from his retreat, looking in the dim light like some queer little gnome as he runs about very fast, taking long strides and crying, "Ki-i-wi, Ki-i-wi!" Until the break of day the kiwi hunts industriously for earthworms, which are his favorite food. He pokes his long beak into the ground and makes a funny, snuffling noise as if he were trying to *suck* out the worms hiding in the soil.

The Curious Big Egg of the Kiwi

Small as he is, the kiwi is a strong and plucky little creature. If you disturb him when he is drowsing at home in the daytime he growls like a disagreeable little dog, and if you do not take this hint and go away, he ruffles his feathers, snaps his beak, and kicks out at you most viciously with his sturdy feet. So it is better not to disturb the little kiwi's nap.

The female is every bit as funny as her mate and just as independent. At nesting time she scoops out a burrow in the ground and there she lays two white eggs which---

like all the females of her kind—she leaves to the male kiwi's tender care. The kiwi's egg is surprisingly large for such a small bird, larger in proportion to her size than an egg laid by any other bird. And this is the origin of the old joke—"The kiwi is a bird that lays an egg bigger than itself!"

The End of Our Trip

With the little kiwi we must end our trip through birdland. We have spent some happy hours with our own home birds, listening to their songs and watching their pretty ways. We have traveled about the country and journeyed over the seas to interview some of the feathered folk in other lands, and we have made the acquaintance of many wonderful, beautiful, and curious birds of all sorts and sizes—from fairy humming birds to giant ostriches.

But we have not seen all the birds in the world, nor nearly all. If we spent all our days traveling round searching for new bird friends we should never know them all; and we should never know all about those we *do* know. There would always be something fresh to learn.

But this is just one of the things that makes life so absorbing. There always has been, and always will be, something more to find out, some new discovery waiting just round the corner if we only take the trouble to look for it.

Once upon a time there lived on the island of Mauritius, in the Indian Ocean, this strange flightless bird called a dodo. It was a little larger than a swan, and was clad in gray feathers, with breast, tail and wings of lighter tone. Its enormous bill was black, and the skin on its cheeks was nearly bare. The dodo was a stupid bird, related to the pigeons. It was killed off late in the seventeenth century.

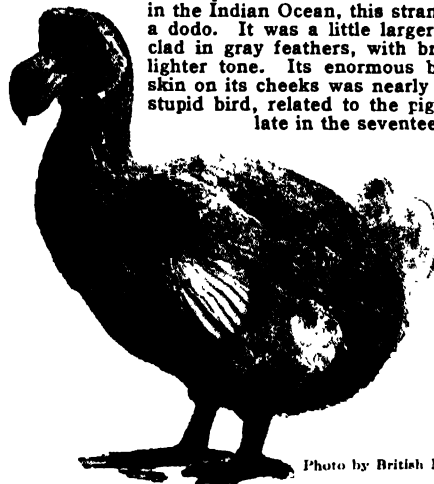


Photo by British Museum

MAMMALS

Reading Unit No. 1

HOW THE BIG APES LIVE

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

Differences and resemblances between man and the big apes, 4-241
The social life of the gorilla, 4-243-44
The story of John Daniel, the

tame gorilla, 4-244
The life and habits of chimpanzees, 4-245-47
The ways of the orang-utan, 4-247-48
The gibbons, 4-249

Things to Think About

In what ways are apes like man?
How do the sleeping habits of gorillas help them to survive?
What were people able to teach John Daniel, the gorilla?

Why are chimpanzees popular beasts at the zoo?
Why is it unsafe to play with old apes?

Picture Hunt

How does a chimpanzee's foot differ from yours? 4-241
Of what did John Daniel die? 4-244
Why is the chimpanzee said to be the most intelligent ape? 4-245

How does a chimpanzee use his feet? 4-246
Why do orang-utans rarely need to hunt for food? 4-247
Of what use to the gibbon are his long arms? 4-249

Leisure-time Activities

PROJECT NO. 1: Visit the zoo and decide for yourself which is the most intelligent ape.
PROJECT NO. 2: Find in books

or magazines some interesting stories showing the intelligence of apes.

Summary Statement

The most popular ape is the chimpanzee, which can be trained to do simple things. Unfortunately, as apes grow older they

become so strong and bad-tempered that they have to be locked up.

HOW THE BIG APES LIVE

This is "Susie" of the Bronx Park zoo, in New York. She is a very well-behaved chimpanzee, and very patient about posing for her photograph, but on her face there is a rather wistful expression which seems to say, "Please, may I have that banana—now?"



Photo by N. Y. Zoological Society

HOW *the* BIG APES LIVE

Here Is a Story of the Mighty Gorilla, the Wily Chimpanzee, the Ungainly Orang, and the Graceful Gibbon

IF WE were searching for the animals that look and act more like ourselves than any others, we should have to cross the sea and explore some of the wild, uninhabited tracts of country in Africa and Asia. For there we should find our nearest animal relatives, the great manlike apes, at home. They belong to the primates (pri'-mât), the first and highest order of animals, to which belong all the true monkeys and a number of other small, monkeylike creatures.

The manlike apes stand at the head of the monkey tribe, and in many ways are more like ourselves than any other inhabitants of the animal world. They have no tails. They have two arms and two legs, instead of the four legs of ordinary beasts, and they can stand upright when they want to, though they do not usually do so; they also have nails on their fingers and toes, instead of claws.

But they have many differences from us. Apes are much more heavily and clumsily built than we are; their legs are shorter and their arms much longer in proportion to their size; their hind paws are more like misshapen hands than feet, while they usually walk on all fours and can only shuffle along in a most awkward manner when they try to walk on their hind legs. Then, too, although they are very intelligent and can be taught all manner of things, the apes do not think and act as men do—in fact they remind us far more of those monsters in human shape, the hairy giants and the misshapen dwarfs, that we read about in old fairy tales.

Away in the depths of the great, gloomy African forests lives the mighty gorilla—the giant of the monkey tribe. He is the largest and strongest of all the apes, and when full-grown is often nearly six feet tall and twice as heavy as an ordinary man. His skin is as

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black as a Negro's; his back and his sides, his long arms and sturdy legs are covered with thick, short, iron-gray hair, while the palms of his hands and the soles of his feet are bare.

We could hardly find a more savage-looking creature in the whole of the animal world than an old gorilla. His

retiring in his ways. He makes his home in the heart of dense forests where the branches of the tall trees are so entangled overhead as to form a thick green roof which shuts out almost every ray of sunlight from the ground below, and where it is as hot and steamy as a Turkish bath.

Not very many animals care to live in these dark, gloomy jungles, but the gorilla appears to enjoy the intense heat and perpetual twilight. He usually walks about on all fours with his fingers doubled up so as to rest his weight on his knuckles; and when he does attempt to walk on his hind legs



huge bullet-shaped head

is sunk deep between his great shoulders, and from beneath his shaggy, overhanging eyebrows he scowls fiercely at everything and everybody. His temper may be ferocious, though some of our travelers tell us he is often mild enough. At least when he is roused, his wild eyes glow with a cruel green light; he opens his great red cavern of a mouth to show his shining fangs and gives a terrific yell which sounds like "Kh-ah! Kh-ah!"

No wonder the African natives are terrified by this monstrous ape, for a full-grown gorilla can be so fierce and strong that even the lion and the leopard may hesitate to attack him. When he is angry the gorilla thumps his broad chest with his fists as if he were beating a drum, while his roars of rage resound through the forest like rolls of thunder.

The Jungle Home of the Gorilla

Few travelers have seen a gorilla in his native haunts, for in spite of his size and his strength the great ape is very shy and

These charming creatures are both young gorillas, one a trifle more polite than the other. As a rule gorillas are sullen, and less active and playful than chimpanzees, though some have made very lively and entertaining pets.



Photos by
N. Y. Zoological
Society

he helps himself along by holding on with his long arm to the branches above his head.

Gorillas are not at all friendly one with another, and whenever two of the males meet they are almost sure to start a desperate fight. The angry apes hug each other in their strong, hairy arms and kick and bite most savagely until one of them is killed or goes off howling with rage to hide himself in the jungle. The animals never stay long in the same place, for they are very restless creatures and lead a kind of gypsy life, wandering through the forest from year's end to year's end. They go about in small bands, which are really like family parties of one old male with his wives and children. There

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are usually two or three wives—and indeed there may be as many as five or six—with a troop of youngsters of all ages and sizes.

A Stern Father of the Jungle

An old gorilla keeps his family strictly in order. He will stand no nonsense from any of his troop. If one of his wives comes worrying him when he wishes to be left alone, or if a lively youngster disturbs him when he is taking a rest, he seizes the foolish one by the head and hurls it away in his wrath to teach it better manners. So the head of the family is treated with respect, and the children soon learn not to annoy him.

In the daytime the whole family roams about searching for wild fruits, berries, and nuts, or for the young green shoots of the forest trees. Although they do not hunt other animals for food, they often catch and kill them simply out of mischief, and they will rob birds' nests of their eggs and crunch up all the insects they can find with their strong, sharp teeth. The elder members of the family like to sit comfortably with their backs resting against the tree trunks while they are having their dinner, but the young ones are seldom quiet for any length of time. They prefer to snatch a mouthful of food here and there as they scamper about up among the branches of the trees. The young gorillas are very lively and noisy, playing all sorts of boisterous games together, hooting and squealing with excitement as they chase one another through the leafy tangles and swing from bough to bough by their long arms.

When the day is nearly over, the grown-up gorillas get ready to make themselves comfortable for the night; for since

they have no settled homes, they go to sleep wherever they happen to be at the time. An old gorilla is very fastidious about his bed. He always makes it himself, and no one else is permitted to have a hand in the making. First of all, the old fellow collects a lot of big boughs and young saplings and piles them up on the ground until he has a rough sort of couch, about nine feet long by six feet wide and a foot or more in depth. On the top of this he heaps up quantities of leaves and twigs to make a thick, soft, springy mattress.

Cradles Built in the Tree Tops

No one is allowed to share this wonderful bed with the old man. He sleeps alone on his luxurious couch, at the foot of a tree, while his wives and children climb up into the branches above him. There they make themselves comfortable by bending and twisting the smaller boughs together to make a firm platform, and by piling a mass of leaves, twigs, and moss on the top. This arrangement is not quite so selfish on the father's part as it may seem to be; for the mother apes and their children are safer in the trees than they would be on the ground. No hungry wild beast prowling about in the night would be bold enough to disturb their slumbers while the old gorilla keeps guard down below.

In the morning, as soon as they wake up, the gorillas move on to another part of the forest. They hardly ever sleep twice in the same place, and every evening they have all the trouble of making their beds over again.

The mother gorilla takes good care of her children. While they are babies she carries them about wherever she goes

This baby gorilla lives at the New York zoo. No one would guess that the gentle-looking infant might grow into a great monster with terrible fangs and ferocious habits. It has been impossible to find out just how true are the savage stories told by African natives about these animals, for not one of the creatures has ever reached its full growth in captivity.

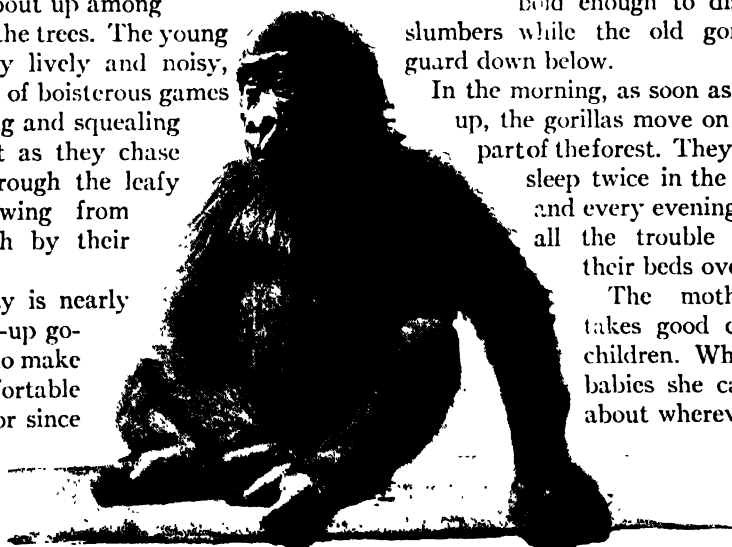


Photo by N. Y. Zoological Society

HOW THE BIG APES LIVE

and the tiny apes cling fast to her fur while she is climbing about in the trees. But the father gorilla can hardly be called a devoted parent, though as long as his children are quite small he does not object to having them about. As soon as they begin to grow up, however, he will not be bothered with them any more, and when they are two or three years old, he angrily drives them away and will have no more to do with them. So the young gorillas wander off into the forest, and as each of the young males grows up, he collects a wife or two and soon has a little family group of his own.

The Tale of John Daniel

Gorillas are such wild creatures that it is nearly impossible to keep them in captivity. They mope to death if they are shut up in a cage. We may sometimes see a very young gorilla in a zoo, but never a fully grown one. The only way to tame a gorilla is to capture it while it is still quite a baby, and bring it up as if it were one of the family; for when still very young, these big apes are gentle and affectionate and most amazingly intelligent.

One famous gorilla, called John Daniel, lived for years in London with some kind folk who took compassion on him when as a tiny thing he was being exhibited in a cage in a large store. The poor little ape was wild with fright at first, but when he found he was being treated gently he soon grew quiet and contented with his lot. John Daniel was taught good manners just as a child is taught them. He had his own bed and his own chair, and was allowed to run about the house as he pleased. He learned to wash himself and to put on his little woolly coat in the morning, to put himself

to bed at night, and to sit up at the table at meal time and eat his food properly with a spoon and fork. John Daniel would romp and play just like a human child. Best of all he loved a game of hide-and-seek, and would giggle with delight when his hiding place was discovered and he was chased up and down the stairs or in and out of the room by his friends.

The Sad End of John Daniel

But when John Daniel began to grow up it became more and more difficult to manage him. He grew so big and strong that it was dangerous to play with him, although he was still quite good-tempered and affectionate. One of his favorite amusements was to stand at an open window and attract the attention

of people passing, by thumping his chest and clapping his hands; and sometimes large crowds collected in front of the house to watch the antics of the big ape. This was very annoying to his

owner, who at last decided sorrowfully that John Daniel must go, for it was no longer safe to keep him in the house.

So the big ape was sold, and brought across the sea to America. Here everything possible was done to make him happy and comfortable in a zoölogical park in New York. But poor John Daniel missed his kind friends sadly, and he fretted so much for them that he did not live very long after his arrival in his new home.

The chimpanzee is not so big as the gorilla and not nearly so savage-looking. But he is often more than four feet tall, when quite grown;

John Daniel, whom you see below, was a very lovable, intelligent little gorilla who died of a broken heart when he was separated from his adopted mother. His body was mounted and is now in the Museum of Natural History in New York.

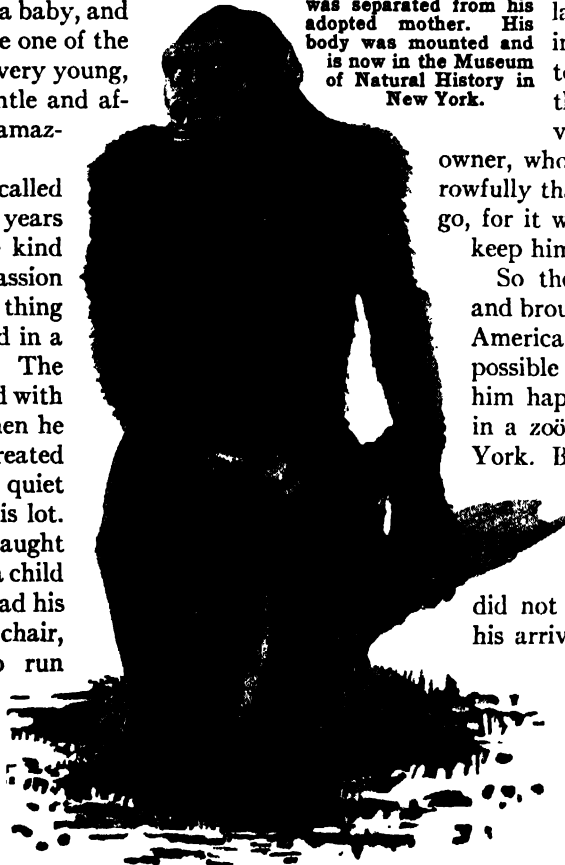


Photo by American Museum of Natural History

HOW THE BIG APES LIVE

Many kinds of tests have been made to find out the intelligence of chimpanzees. This rompered chimpanzee of the New York zoo is supposed to be taking a test, but he looks as though he were wondering how soon he might run off and play—and in that he would certainly be quite human!

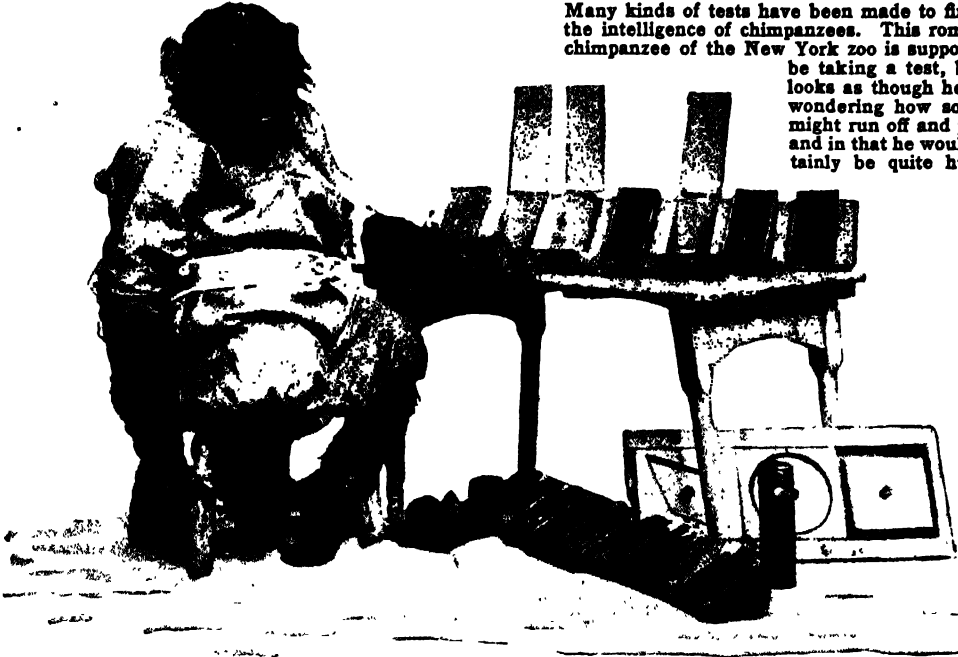


Photo by N. Y. Zoological Society

and with his funny shrewd-looking face and the short frilly beard about his chin, he looks ridiculously like a queer little old man, especially when you see him hobbling around on his hind legs. But the chimpanzee does not often walk like this; he much prefers to crawl about on his hands and feet, and in his home in the African forests he almost always climbs about the trees or runs along the ground on all fours.

The Happy-go-lucky Chimp

Chimpanzees are much more friendly in their ways than their big, grumpy cousins the gorillas. Several family groups will join forces and wander about together, hunting for fruit and nuts and young green shoots. When they have stripped the trees of everything they like in one place, the whole troop will move on to another part of the forest. Of course they sometimes quarrel among themselves, but on the whole the chimpanzees belonging to the same troop agree very well together. If they meet with another wandering party it is a different matter. Then there is sure to be trouble.

When food is scarce in the woods, bands of chimpanzees will come out boldly into the

open country and make raids on the plantations and cultivated fields on the outskirts of the forests. They know quite well that this is a dangerous business, and while they are hastily stripping the fruit from the trees and vines, or tearing up the growing crops in great handfuls, one or two of the party always keep guard to warn the rest if anyone is coming to stop their little game. If the owner of the land with his dogs and helpers comes hurrying up to punish the thieves, the sentinels give a loud, warning cry; and away they all scamper back to the forest, where it is impossible to catch the cunning rascals.

The Chimps' Song at Twilight

These roving bands of apes spend most of the day, and the greater part of the night as well, wandering about the forests, and they often make the most horrible noise, especially before they go to bed, by all howling and yelling in chorus. When they are tired of this entertainment, the female chimpanzees climb up into the trees with their young ones and make a rough kind of nest by pulling some of the branches together. There they go to sleep for the rest of the night, while the father of each little family rests on a

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bough with his back against the tree trunk just below his wife and children to protect them from prowling animals in search of a supper.

Very few wild creatures care to tackle a troop of chimpanzees, for these apes are very strong, and can fight with their hands and feet and teeth in the most furious fashion. If a big beast of prey attacks one of the troop, two or three of his comrades will often come to his aid and help him to drive off the enemy. Their most dangerous foe is the leopard, but even a single chimpanzee will occasionally get the best of one of these great cats, and send it limping off into the jungle so badly injured that it sometimes dies from the terrible bites it has received. Of course the chimpanzee is badly hurt too, by the teeth and claws of the leopard; but he usually recovers and joins his companions again after he has sulked by himself in a tree for a few days, moaning and groaning over his wounds.

Chimpanzees are much easier to tame than gorillas. When well treated they will live quite happily in a zoo, and they soon grow attached to their keepers. Young chimpanzees are very much like young children in the way they love to play and romp together; but they are quick-tempered and excitable, and will kick and bite and scream with rage if they are not allowed to do as

they please. They are the most intelligent of all the manlike apes, but of course they vary greatly in their cunning.

Some of them are dull and sulky; they simply will not learn, and it is no use trying to make them do so. Others are so quick and bright that we can teach them almost anything. Clever chimpanzees soon learn to open and shut the door, to sweep out their cages, to

drink out of cups, to sit up at the table, and to use a spoon and fork. Some have even been taught to ride bicycles and skate on roller skates, while one very clever young fellow actually learned to smoke a pipe and carry a small hod of bricks up a ladder, like a real bricklayer.

One of the keepers at the London Zoological Gardens has taught two young chimpanzees, a brother and sister, to give a most amusing entertainment to visitors. First he orders them to salute, and the two little apes climb up on a shelf, sit side by side, and solemnly raise their right hands to their foreheads. Then a cup of milk and a spoon is handed to the older monkey and he is told to feed his little sister. Thereupon the young lady opens her mouth wide while her brother carefully spoons the milk into it and goes on feeding her until he is told he may have some himself. Then he puts down the spoon and drinks up the milk that remains in the cup.

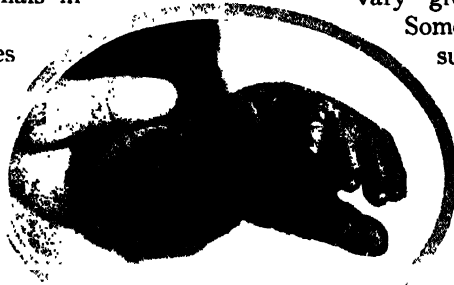


Photo by N. Y. Zoological Society

Which do you take this to be, a hand or a foot? It certainly looks more like a hand, and it is almost as useful to the gorilla as his hand is. The fact that it is his foot makes walking more difficult for a gorilla than it is for us, who have feet without any "thumbs" on them.

Here are two friendly chimpanzees posing for their photograph. The one on the left is evidently trying to look pleasant to please the photographer. What fun it must be to be able to curl your toes all the way around a chair rung!



Photo by N. Y. Zoological Society

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Photo by American Museum of Natural History

Here is a group of orang-utans in their native haunts. These animals are very lazy and like to sit in their tree-top homes within easy reach of their meals, which

Then the keeper gives the brother chimpanzee two pieces of apple or banana, a large piece and a small piece, and tells him to give one to his sister. The polite young ape at once hands the large piece to his sister and eats the small one himself.

The Manlike Orang-utan

Another manlike ape, the orang-utan, lives in the hot steamy forests of Borneo and Sumatra. He is about the same size as the chimpanzee, but instead of being black like his African cousin the orang is clothed from head to foot with long, shaggy, reddish hair, while his melancholy face has a strange bluish tint.

"Wild Man of the Woods"

The orang can scarcely be called a handsome ape. He is much too broad and heavy for his height, his legs are short and ex-

consist mostly of fruit and nuts. They are fond of small shellfish too, and will occasionally get up enough energy to travel down to the seashore to find some.

tremely bowed, and his hairy arms are so long that he can almost touch the ground with his fingers when he stands upright. He looks more like a queer misshapen dwarf than anything else, and his name of orang-utan—which means "wild man of the woods"—really suits him very well.

The Ways of a Father Orang

He is not a very sociable beast. A pair of orangs with two or three little ones may live together for a time; but the father orang soon tires of family life, and leaves his wife to take care of the children while he wanders off into the forest by himself. Living alone up among the branches of the crowded trees, the orang is quite happy and contented. He is rather a lazy fellow. He goes to bed early and gets up late; and will spend hours in the daytime perched in a strong forked bough

HOW THE BIG APES LIVE

doing nothing at all—except stretching out a long arm now and then to pluck the juicy fruit growing round about. But if anyone disturbs the wild-man-of-the-woods when he is enjoying himself in this way, he flies into a temper, snarls with rage, and packs the intruder off by pelting him with sticky, prickly fruit.

On the ground the orang is very awkward; he uses his arms as crutches and swings his legs between them as he shambles slowly along. But up in the trees he moves more easily; and although he never appears to hurry, he can swing himself through the branches quite as quickly as you could run below them.

Like the other apes, the orang has no permanent home. He moves about from place to place as he feels inclined, and when the night falls makes himself comfortable in a rough kind of nest made of branches and leaves, high up among the boughs of the trees.

Young orangs become quite tame in cap-

tivity. They are not so merry and bright as young chimpanzees, but they are gentle and affectionate. They like to be petted by

their keepers; and if they are scolded they will roll on the ground and cry like a spoiled child. Both orangs and chimpanzees are fond of "showing off." They love to be noticed and admired, and like all the monkey tribe they are great mimics. If you run they will run, if you dance they dance too, and if you open and shut a box or a door they at once try to do the same thing; so by copying their keepers or the people they live with, the young fellows quickly learn all sorts of funny tricks.

But as they grow older these big apes are not so easily managed. They sulk, and give way to fits of temper if they are not allowed to do just as they please; and since they are very strong when full-grown, they are no longer safe to play with.

Besides these three big apes—the gorilla, the chimpanzee, and the orang-utan—there are a number of smaller apes called "gibbons." They are slender, graceful little creatures, and can stand erect and walk on their hind legs much better than their big cousins can, although in other ways they are not quite so manlike and intelligent. All the gibbons have very long arms, and when they are walking they hold their arms above their heads, or clasp their hands at the back of their necks, to help to keep their balance.

There are several kinds of these funny little apes in the forests of Southern Asia. They are seldom more than three feet tall when



Photo by F. W. Bond

Orang-utans, like this one, are very unattractive-looking animals, with great cheek pouches, long red hair, and close-set eyes. They often have thoughtful expressions on their faces, but whatever they may be thinking about, it is not their personal appearance, for they are among the untidiest of the mammals.



The camera has caught this orang-utan in a characteristic pose.

Photo by N. Y. Zoological Society

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standing upright, and most of them are even smaller; and although they live in such a hot part of the world, they are all clad in thick woolly coats. They are not all exactly alike, however; some have black coats, others dark brown ones. One very handsome fellow, called the silvery gibbon, is either white or pale bluish-gray in color, while another, called the hoolock, is black with a broad white band like a bandage across its forehead.

Although they can walk and even run quite fast upon the ground, the gibbons are much more at home up aloft, scampering through the leafy branches of the fruit trees. So wonderfully quick and light are these little apes as they flit about the tree tops, that they have been called the swallows of the monkey tribe. They whisk through the foliage at a tremendous rate, yet never lose their footing and fall. Hanging by their

long arms from a bough ever so high above the ground, they can swing rapidly backward and forward—once, twice, and away they go, skimming through the air to another tree twenty or thirty feet away!

Gibbons are much more sociable than the larger apes. Numbers of them live together in friendly fashion and spend most of their time careering through the woods and groves of the forests like a troop of acrobats. They whoop with excitement as they leap and bound about, making such a noise that they can be heard a mile or more away. Even the little mother gibbons with tiny babies to care for will dash about with their friends and companions. They hurl themselves just as recklessly as ever through the air, carrying their infants with them, and the little creatures who cling tightly to their mother's fur seem none the worse for being shaken up.

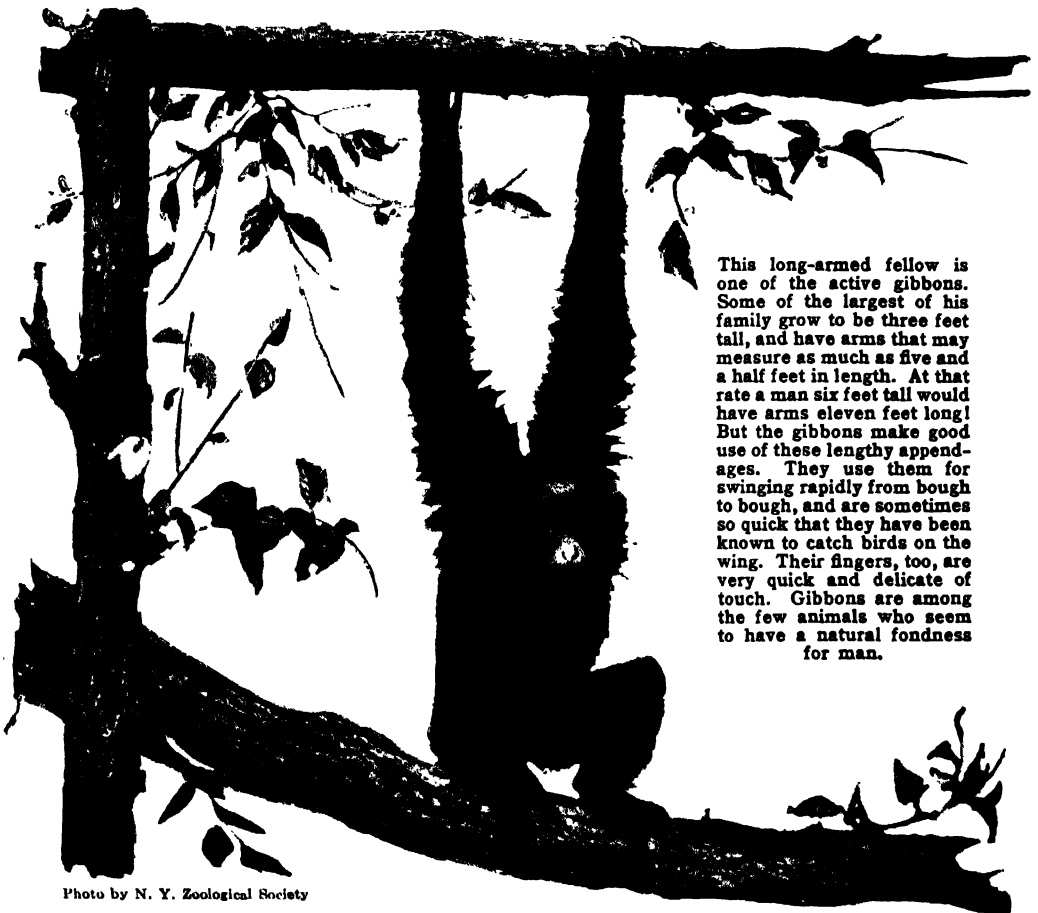


Photo by N. Y. Zoological Society

This long-armed fellow is one of the active gibbons. Some of the largest of his family grow to be three feet tall, and have arms that may measure as much as five and a half feet in length. At that rate a man six feet tall would have arms eleven feet long! But the gibbons make good use of these lengthy appendages. They use them for swinging rapidly from bough to bough, and are sometimes so quick that they have been known to catch birds on the wing. Their fingers, too, are very quick and delicate of touch. Gibbons are among the few animals who seem to have a natural fondness for man.

MAMMALS

Reading Unit

No. 2

THE MONKEYS AND THEIR "MONKEY SHINES"

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

Where monkeys are found, 4-251
The African guenons, 4-252-54
A monkey that is hunted for its fur, 4-254-55
The sacred monkeys of India, 4-255-56

Monkeys that live where the snow lies thick, 4-256-57
The mischievous macaques, 4-257-58
Dangerous baboons, 4-259
The astonishing mandrill, 4-260

Things to Think About

In what ways do monkeys differ from apes?
What kinds of food do monkeys eat?
Which monkey is trained to pick

out ripe nuts from palm trees for its master?
Why do nearly all animals, even man, fear the African baboons?

Picture Hunt

What were the "hairy women" once captured by a sailor? 4-251
What characterizes the guenon monkeys? 4-252
What unusual item is part of the diet of a pig-tailed macaque? 4-254
Why do hanumans constantly

steal and plunder? 4-255
Why are the monkey houses in a zoo always crowded? 4-256
How does a monkey's foot differ from yours? 4-258
Why are leopards afraid of baboons and mandrills? 4-259-60

Related Material

Why do monkeys find it hard to walk erect? 2-319
How long ago were monkeys and

apes first put into zoos? 4-475
What kinds of monkeys live in America? 4-262-69

Leisure-time Activities

PROJECT NO. 1 Visit the monkey house at the zoo. Learn to recognize some of the monkeys described in this chapter.

PROJECT NO. 2: Find in books and magazines pictures of various kinds of monkeys.

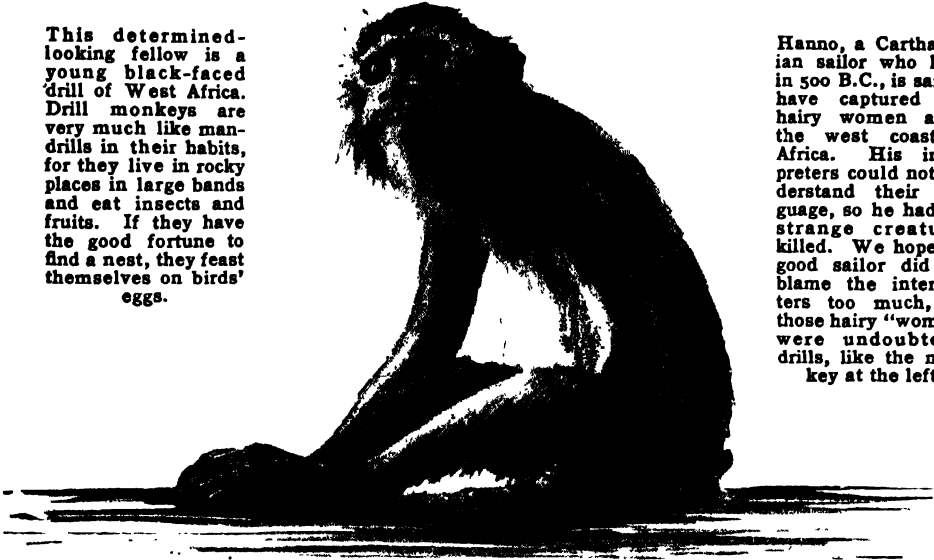
Summary Statement

The old-world monkeys live in the Eastern Hemisphere, usually in hot countries. They cannot use their tails as a fifth hand. They vary greatly in size. Most

of them eat fruits, nuts, and leaves, but some add insects to their diet, and one kind eats crabs.

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This determined-looking fellow is a young black-faced drill of West Africa. Drill monkeys are very much like mandrills in their habits, for they live in rocky places in large bands and eat insects and fruits. If they have the good fortune to find a nest, they feast themselves on birds' eggs.



Hanno, a Carthaginian sailor who lived in 500 B.C., is said to have captured two hairy women along the west coast of Africa. His interpreters could not understand their language, so he had the strange creatures killed. We hope the good sailor did not blame the interpreters too much, for those hairy "women" were undoubtedly drills, like the monkey at the left.

Photo by American Museum of Natural History

The MONKEYS and THEIR "MONKEY SHINES"

Here You May Read about the Lively, Noisy, Playful, or Spiteful Climbers in the Jungle, and about Their Cousins in Other Places

WHEREVER the sun shines hottest and there are plenty of trees to live in, we are almost sure to find some of the smaller monkey folk scampering about and enjoying life in their own peculiar way.

In hot tropical countries all over the world multitudes of their prancing bands make their homes in the forests and jungles, among the trees on the hillsides, and in all well-wooded districts. There are monkeys of varying shapes and sizes in Africa, in Southern Asia, and in South America throughout the marvelous tropical forests along the Amazon River; but there are none in North America, or anywhere in Europe except in Gibraltar. The monkey folk love plenty of heat, and only a very few hardy ones can live in countries where it is at all chilly.

There are monkeys that are hardly bigger than squirrels, and others nearly as big as the smaller apes. Some of them have smooth coats, while others have thick, furry ones with capes and ruffles, long ear tufts, crests, or beards. There are dog-faced monkeys

and blue-faced monkeys, long-nosed monkeys and snub-nosed monkeys; and while most of the tribe are quietly clad in black or in some shade of brown or gray, others are the proud possessors of gayly tinted waistcoats or have brilliant patches of color on some part of their anatomy.

But however much monkeys may differ in appearance one from another, they are all alike in having four hands, instead of two hands and two feet, or the four feet of other beasts; and very useful they find these extra hands when they are climbing about the trees. Then, although in many ways monkeys resemble their big relatives, the manlike apes, they are not so broad and burly, and most of them have tails—long tails or short tails, thin tails, bushy tails, or curly tails. Only a very few monkeys have no tails at all. Their legs, too, are longer in proportion to their bodies than an ape's, while their arms are shorter; and monkeys are altogether lighter, more nimble animals than any of the apes except the airy gibbons.

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Old World monkeys and New World monkeys are not exactly alike in every particular. An American monkey will often use its tail as a fifth hand when it is climbing about the trees, and will even amuse itself by swinging head downward in the air with its tail coiled around a bough; but no Old World monkey can do this.

On the other hand, many monkeys in Africa and Asia have convenient cheek pouches in which they can stow away for future use anything they do not happen to want at the moment. With a bulging cheekful of rice or nuts on each side of their faces, these little animals can still chatter and bite and even eat quite comfortably; and thus each one can carry about a private store of food, from which it can help itself when it is hungry. Besides this, all the Old World monkeys have a bare patch of hard skin on their hind quarters which makes a natural pad to sit down on. All these advantages are not shared by their American cousins.

Africa is the home of numbers of lively little monkeys who live up in the forest trees and go about in merry chattering bands. They are called "guenons" (gē-nōN'), or "grimacing monkeys," because they are always puckering up their funny little faces and making the most absurd grimaces.

Each band of guenons has a recognized leader, a wise old monkey who keeps a sharp lookout for any danger, and issues orders to his troop. He uses several different notes and calls, which his followers appear always to understand and obey. If they are making too much noise the old fellow gives a warning note, and then all the little monkeys stop chattering at once; for well they know how foolish it is for small wild folk to attract attention by making a noise when enemies are about.

But although there are slinking snakes to

be feared, and beasts of prey prowling around ready to snap up careless young monkeys, the guenons are still jolly, happy-go-lucky little people. They scamper and bound about in their green world in the tree tops, and have the most exciting games of follow my leader among the leafy branches. They pull one another's tails and play all sorts of mad pranks on one another; they tease the noisy parrots and make the birds squawk by

slyly creeping up behind them and plucking out their tail feathers when they are feeding or resting in the trees.

Each merry band takes possession of a certain area in the forest which it looks upon as its own property, and within its bounds all the members of the little community play and feed and sleep. They are very jealous of their rights, and if another monkey band encroaches on their estate they all unite to

drive the intruders away. Sometimes a pitched battle will take place between two rival clans. The angry little monkeys chatter and scream and bite and kick until one party succeeds in driving the other one over the borders of the disputed territory.

Bandits of the Jungles

These grimacing monkeys feed on fruits and nuts and berries and fresh green shoots, and usually find plenty to eat in their forest. But if supplies run short they will make expeditions to the nearest cultivated lands and raid the plantations and fields. Led by the captain of the band, the monkeys travel rapidly along regular pathways through the tree tops till they reach the edge of the forest. There they descend to the ground, make a dash for the fields, and start tearing up the crops and stuffing their cheek pouches as fast as they can. Then at a signal from their leader the monkeys all scamper home again, their cheeks so crammed with the



Photo by N. Y. Zoological Society

There are many varieties of the guenon, or grimacing monkey, and they are all rather slenderly built. All of them have long tails, like the black guenon above.

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spoils that the whole party looks as if it might be suffering from mumps!

A Family of Wise and Cautious Monkeys

There are any number of these amusing little monkeys all up and down the great African continent. In the south and northeast the vervet and the griset, two of the smallest of the grimacing family, live in large troops in the forest trees. They are very lively and nimble little animals, but they are wonderfully wise and cautious, too; they never show themselves or give themselves away by chattering when enemies or strangers are about. A traveler passing beneath the trees in which these sly little creatures are congregated may not hear or see a single one; although scores of tiny puckered-up faces may all the time be peering at him through the tangle of green leaves overhead. The cunning monkeys all "lie low and say nuffin'" until the alarming stranger is safely out of sight. Then the spell is broken and they all begin to frisk and chatter again in their usual light-hearted manner.

The vervet and the griset are very much alike. Both have greenish-gray coats and light waistcoats, black faces and black hands and feet; but the vervet monkey has a black tip to its tail and a reddish patch at the base of it, while the griset is distinguished by its white chin and whiskers.

The green monkey of West Africa is not unlike its cousin the griset, but it is a little larger, and its throat and its whiskers are yellow, or sometimes almost orange, in color. This monkey is not a bright green, as you might suppose from its name, but its fur coat is made up of a mixture of yellow and black hairs which give it a decided olive-green tint.

Other grimacing monkeys in various parts of Africa are marked by red, white, or blue patches on their funny little noses; this gives them a most comical expression. Then there is the moustache monkey, which, in addition

to a blue mark on its nose, boasts a fine yellow moustache; and there are several other kinds of monkeys with beards and whiskers of varying sizes and colors.

But the favorite grimacing monkeys are the mona and the Diana. Both of these come from West Africa and are such intelligent and amusing little creatures that they are often kept as pets. The mona is especially gentle and affectionate. It is a quaint and pretty little monkey, about as big as an ordinary cat, with a soft dark coat, white waistcoat, a white bar on its forehead, and a curious white spot on each hip. But the most remarkable thing about the little mona is its funny face; for while the upper half is blue, the lips and chin are pale pink and the cheeks are adorned with a pair of bushy, straw-colored whiskers.

The Diana monkey is honored by being named after Diana, the Greek goddess of the moon, because in the center of its forehead it has a white crescent-shaped mark like a new moon. In its coat of dark chestnut, relieved with patches of bright orange and white, it is the most gayly clad of all the grimacing monkeys,

and on its chin is a funny little goatee. The Diana is immensely proud of its beard, and when drinking always holds it carefully on one side with its paw, lest it should get wet and dragged.

"Monkey Shines" of the Diana

Although the Diana makes a most amusing pet, it is so full of mischief that if it is allowed to run about the house as it pleases, it will snatch up rings, brooches, or any other pretty bright things it finds lying about and hide

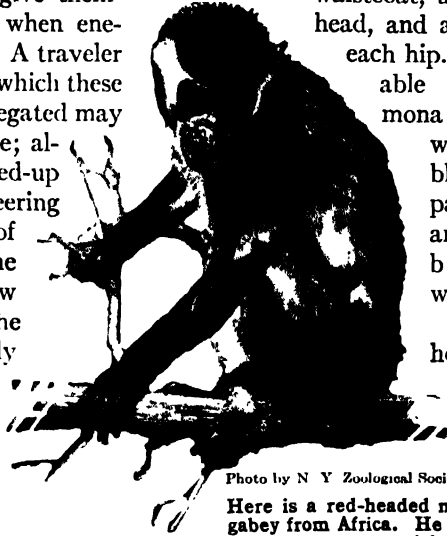


Photo by N. Y. Zoological Society

Here is a red-headed mangabey from Africa. He gets his name, as you might expect, from the maroon-colored cap he wears permanently on the top of his head. He is a lively fellow and sometimes extremely intelligent. All the typical mangabeys look just as though someone had pasted a piece of flesh-colored sticking plaster across their upper eyelids. For that reason they are sometimes called white-eyelid monkeys.

MONKEYS OF THE OLD WORLD

them in all sorts of odd holes and corners. Once it has put its stolen playthings where no one is likely to find them, the troublesome little monkey promptly forgets all about them! It is very jealous, too, of other pets, and is quite likely to throw the kitten out of the window if anyone pays too much attention to it.

Big, Bold, Red Monkeys

Biggest and boldest of the guenons are the red monkeys of Senegambia, on the west coast of Africa. These monkeys live together in large colonies, and instead of hiding and keeping quiet when travelers enter their territory, as most of their relatives do, the red monkeys angrily pelt the intruders with fruit, sticks, and anything else they can hastily tear from the trees in which they are perched. The whole troop will sometimes follow a boat for miles along a river that winds through the forest, flinging showers of missiles at the unhappy rowers, who cannot get out of range or retaliate on the impish monkeys.

Quite as entertaining as the guenons are the small African monkeys usually called "white-eyelid monkeys" on account of the pale flesh-colored eyelids which give such a comical expression to their tiny dark faces. They are the most lively little folk, up to all sorts of tricks, and have a funny way of screwing up their faces just as if they were laughing. They skip and gambol and tumble about, and cut all sorts of ridiculous capers. We may often see some of these little jokers in a zoo, where they make themselves quite at home in the large, airy cages provided for them. They will go through the most

absurd antics and contortions to attract the attention of visitors, and then hold out their tiny hands through the bars for the fruit, cake, or nuts they expect to be given as a reward for their entertainment.

There are several of these little white-eyelid monkeys—or mangabeys (*mäng'gā-bā*), as they really should be called. The sooty mangabey is almost black, with dark brown smudges on its queer little face; another one with a deep red cap on its head is often called the "cherry-crown monkey"; and there is a white-crowned mangabey, a white-collared mangabey, a crested mangabey with

The pig-tailed macaque of Borneo has a short, slender tail somewhat like a pig's. Macaques are very fond of crabs and are often called the crab-eating monkeys. Their favorite haunt is near a creek or river into which the tides enter from the sea.

a shock of long hair standing up like a crest on the top of its head, besides many others distinguished by the color of their coats and waist-coats. But with one exception all these little monkeys are alike

having white eyelids and in their peculiar way of carrying their long tails curved over their backs—which is most unusual in monkey land.

The guerezas (*gër'è-zà*)—another race of African monkeys—are famous for the beautiful coats of long silky hair which cover them like fringed mantles, almost sweeping the ground as they walk. Some have black velvety coats with long, sweeping fringes of snowy white, others are black with wonderful white manes or ruffles, long white plumes on their shoulders, and tufts or fringes of white hair on their tails. But sad to say, these poor monkeys are far too often killed for the sake of their beautiful coats, which are very valuable as fur. The warrior chiefs of Abyssinia trim their shields with these long white silky fringes to mark

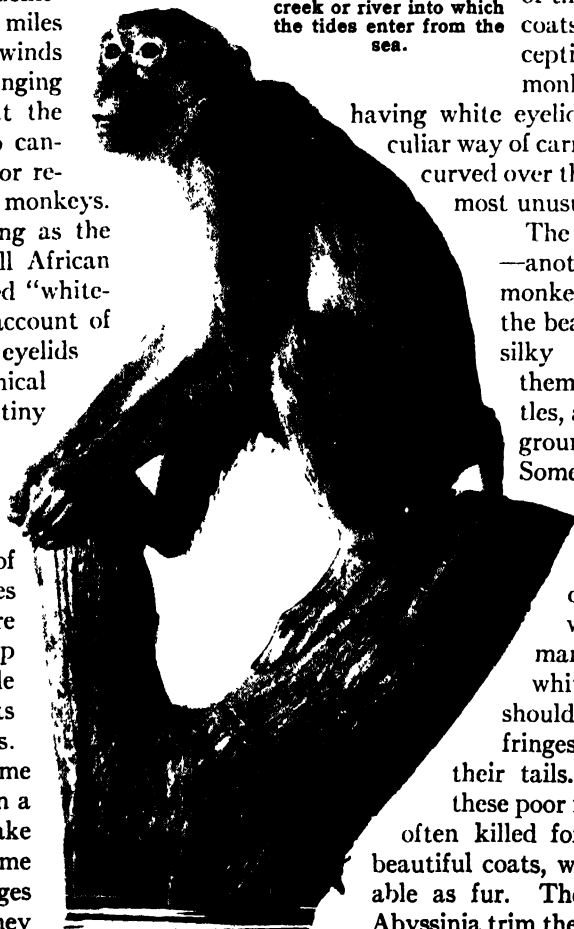


Photo by N. Y. Zoological Society

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their high rank, and fashionable ladies in Europe and America often use the handsome hair, dyed black, to trim their coats and dresses.

Guerezas are quiet, gentle creatures. They move about quite silently in the trees, and never leave their forest homes to raid the fields and plantations, as the mischievous grimacing monkeys do. They eat fruits and seeds of various kinds, but best of all they seem to like fresh green leaves. Their cheek pouches are far too small to be used as pockets; so the guerezas cannot carry supplies of food about with them, as do most of the African monkeys.

These well behaved monkeys live together in wandering bands on the mountains of Abyssinia and parts of Southern Africa. They leap from tree to tree with tremendous bounds, and at night they put themselves to bed in the topmost boughs, well out of reach of prowling beasts of prey. Although a guereza in a zoo looks so conspicuous in its striking black and white coat, it is most difficult to see when it is perched up in the tree tops; for there the long fringes of its coat can hardly be distinguished from the festoons of lichens hanging from the boughs of the trees.

All Fingers and No Thumbs

One very curious thing about these pretty monkeys is the fact that they have no thumbs on their forepaws, or only a tiny stump which is really of no use at all. But this does not appear to trouble the guerezas. They climb about and cling to the boughs of the trees just as well with their four long fingers as other monkeys do with five.

Most of the small monkey folk are lucky little animals. They have all they want to make them happy in their forest homes.

They find plenty of food growing round about on the trees, and they have troops of merry companions to frisk and gambol with. But no monkeys in all the world have such a good time as the hanumans (hūn'ōō-măn),

or sacred monkeys of India. They are the spoiled children of the monkey tribe, and are allowed to do just as they like, for no

Hindu would ever dare to harm one of the sacred

"gray people," as these pampered monkeys are called by the natives of India, or to interfere with the creatures in any way.

The hanumans are fairly big monkeys with grayish-brown coats, faces, hands, and feet of coal-black, and very

long, thin tails. Their natural home, of course, is in

the Indian forests, but they do not stay there, oh dear, no! Not

if there are any human beings living near them! The impudent

creatures come gayly bounding into towns or villages, and act as if they owned the place. They

troop into shops and bazaars, and

boldly help themselves to fruit, cakes, rice, or anything else they fancy. They hold meetings up on the roofs of the low native houses, climb in at the windows, snatch up whatever happens to please them, and gallop off with their plunder. Sometimes a party of monkeys will camp out on a housetop and amuse themselves by pulling off the tiles to see if there is anything good to eat underneath. Then, of course, when the rainy season sets in, the rain pours through the leaky roof into the house and makes no end of trouble.

A Wedding Feast in India

Many are the stories told of these mischievous monkeys and their thieving ways. On one occasion the chief confectioner of a hillside town in India made a splendid wedding cake and shut it up for safety in a room



Photo by S. S. Zoological Society

This is one of the hanumans, the sacred monkeys of India. He has a black face, and long scampering legs which are very useful to him when he turns to thieving.

MONKEYS OF THE OLD WORLD

at the back of his house. The man carefully locked the door of the room, but he forgot to close the window, which looked out on the beautiful wooded slopes of some hills. Next day when he came to fetch that cake he found it clean gone! The leader of a troop of gray monkeys was just handing the last piece out of the window to his followers, who had invited themselves to the wedding feast and were strewing the hillside with fragments of sugar icing.

Wherever there are many white residents in India, the sacred monkeys do not have things quite so much their own way, and even the Hindus sometimes grow tired of their pilfering ways and try to get rid of the unwelcome visitors without offending them. In one town where the monkeys had made themselves a nuisance for a long time, the people determined to put up with them no longer. So they rounded up the worrisome little beasts, packed them into covered carts, drove them to a nice, wooded part of the country many miles from the town, and there let them loose.

At first the monkeys were delighted. They had enjoyed the ride, and they now began to play and tear about like a party of school children out for a day in the country. But when the men tried to drive off without their passengers, the monkeys grew alarmed and indignant. They refused to be left behind. With one accord they scampered after their

departing friends and, leaping and bounding along beside them, followed the carts all the way back to the town again!

Even when the hanuman monkeys live in the wilds far from any human habitation, they appear to recognize a man as their friend and to have no fear of him when he invades their territory. They will look

down on a traveler from their perches in the trees and give a joyous whoop, as if they were pleased to meet him. But if their old enemy the tiger appears, they will point at him and utter deep hoarse cries of rage and terror.

The hanumans belong to a tribe of Asiatic monkeys called langurs (lŭng-gŭor'). They have no cheek pouches, and in their native haunts—where there are no shops to plunder or wedding cakes to steal they feed chiefly on leaves and young shoots.

Most of the langurs live in the tropical forests, but some of them make their homes high up on the Himalayas, in the forests of pines and cedars which are often covered with snow. There troops of these hardy monkeys bound from tree to tree, scattering the snow in showers from the branches as they go.

Closely related to the langurs are the curious snub-nosed and long-nosed monkeys. The snub-nosed ones are Chinese monkey folk. Like their hardy cousins of the Himalayas, they live in the highlands where the snow lies thick for the greater part of the



Photo by F. W. Bond

Here is a capped langur with her baby. She gets her name from the dark hair on the top of her head; it contrasts curiously with her light-gray body, and looks like a cap. Her baby is much prettier than most monkey babies; he has a little pink face and a soft, golden, baby-coat. His mother is very proud of him and will often hold him up for passers-by to admire.

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year. They are very striking in appearance, as gayly clad as a Chinese mandarin. Their coats are golden-brown above and a brilliant orange below; they also have orange-colored patches on their cheeks and a fringe of orange hair on their foreheads, while the skin covering the bare part of their faces is bright blue! There is another snub-nosed monkey, living in the valleys below, which is much more soberly clad. He wears a complete suit of slate-gray, without any bright trimmings; but both he and his gorgeous highland cousin are alike in having absurd little turned-up noses, with the tip almost on a level with their eyes.

The long-nosed monkey is a native of Borneo. He makes his home in the trees along the banks of the Sarawak River, and is fond of sitting with a dozen or more companions swinging himself on the branches and gazing lazily at the scenery. The long-nosed monkey is altogether remarkable in his suit of chestnut and brown with white facings, set off by his very long straight tail; but his most striking feature is an enormously long drooping nose, which looks like a comic false nose stuck in the middle of his face. The natives of Borneo declare that the queer monkey holds his nose when he is jumping about, for fear that he may bang it against the branches. We hardly need to believe this story—though such a huge proboscis must at times be a bit of a nuisance to its owner.

Tails and Noses for Every Fancy

It is only when they are quite grown up that these monkeys have such imposing noses. The young ones have quite short turned-up noses, like their snub-nosed cousins.

Besides the langurs and their peculiar relatives, there are a number of other interesting monkeys called macaques (*mā-kāk'*) ranging over tropical Asia from India to Japan and from the Himalayas to Borneo. There are



Photo by N. Y. Zoological Society.

The bonnet monkey, which gets its name from the fact that its hair grows outward from the center of its crown, is one of the most mischievous of the Indian monkeys. Its great delight is to rifle the shops in towns near its forest home.

several kinds of these macaques—some with long tails, some with short ones, and just a few with no tails at all—but they are all strong, sturdily built animals with long muzzles, long hind legs, and big useful cheek pouches.

In Northern India troops of small brown monkeys with red faces disport themselves in the forests and open country. Like so many other animals, these monkeys have several names—which is very confusing—but in India they are usually called banders. The banders do not bear a very good character. They are bold, mischievous little things, and, like the sacred monkeys, they dash into the towns in plundering bands to pillage the shops of native grain sellers whenever they get the chance. They are noisy, too, and make a terrible din with their chattering when anything excites them. In some respects the banders are not unlike the grinning monkeys, though they are not nearly so gentle and good-tempered. Most of them, in fact, are very cross, ready to snarl and kick and bite at the least provocation. They are intelligent little creatures, as a rule, and when captured quite young are not difficult to tame, but a grown-up macaque of any description is hopeless!

There are, however, a few exceptions to the rule. The bonnet monkey is a general favorite with everybody. It is a quaint little animal with its hair parted in the middle and arranged in such a fashion that it looks just as if it were wearing a close-fitting bonnet. This monkey makes a delightful pet when it is young, and is very intelligent and entertaining in its ways. The native conjurers often teach it to dance and do all sorts of amusing tricks.

Pig-tailed Monkeys of Burma

Then there is the pig-tailed monkey of Burma. He is one of the largest of the

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macaques, and has a very comical little pig-like tail which is usually curled over his back. Although he is often very savage when he is grown, he makes an intelligent pupil if his education is taken in hand while he is still very young; so he is often trained to climb the tall palm trees to pick out the ripe nuts and bring them down to his master.

More curious still is the lion-tailed monkey of Ceylon, for his thin, wispy tail has a tuft of hair like a tassel at the end of it—just as a lion's tail has. Lion-tail is altogether a most curious animal. His face and his coat are coal-black, a thick mane of gray hair falls over his shoulders, and an enormous gray ruff surrounds his face, making him look like a queer old black man wearing a shaggy beard and whiskers. He is very grave and dignified. He does not skip and prance about in the usual monkey way, and the natives of Ceylon believe that all other monkeys treat him with the greatest respect. Well may this be so. For he has such a savage temper that we may doubt if any of his kinsfolk would dare to take liberties with him.

But old lion-tail is a bit of a humbug. He is not really so wise as he looks. He is much less intelligent than many ordinary little monkeys, and so obstinate and sulky that it is almost useless to try to teach him anything. He is sometimes called the wanderer; but that name really belongs to the purple-faced langur, and the lion-tailed monkey has no right to it.

Nearly all macaques catch and eat insects as a change from the usual monkey fare of fruit and seeds and green leaves. Some even eat lizards and frogs; but a small brown pink-faced monkey living in the Far East has the strangest appetite of all, for his favorite food is a tasty young crab or a plump, succulent shellfish!

Crab-eating monkeys live on the banks of

tidal rivers and creeks among the roots and boughs of the strange twisted mangrove trees, and spend most of their time hunting for crabs along the shore. Small family parties, consisting of the father of the family with his wives and children, go hunting together, and it is a funny sight to see them

all poking their fingers under the stones where crabs may be hiding, and scampering after their prey as it scuttles away in a hurry. Even if the monkeys fall into the water in the excitement of the chase it does not hurt them, for they all swim and dive well and do not mind a wetting, as most monkeys do.

The only one of these macaques that does not live in Asia is the magot (măg'öt), or Barbary ape, who is a native of Northern Africa. This fellow is not really an ape. He is a big, doglike monkey with no tail, or with only such a tiny stump that it is not worth mentioning. In many ways he is much more like a baboon than like his own near relatives. The Barbary ape is also found on the rock of Gibraltar,

though how he got there no one seems to know exactly. It is supposed that many years ago some of the monkeys were carried over to Spain by the Moors; and finding the new country to their liking, the creatures settled down there. So the Barbary ape now enjoys the distinction of being the only one of the monkey tribe that runs wild in Europe. There he prances about on the highest ledges of the rock with his merry companions—for the Barbary apes, like most monkeys, go about in troops—and amuses himself by catching lizards and scorpions. Catching scorpions may seem rather a dangerous game, but the bold monkey pounces upon the poisonous things, twitches off their lashing tails, and proceeds to eat them as calmly as if they were carrots!

Last and least of the Old World monkeys are the African baboons, or dog-faced mon-



Photo by N. Y. Zoological Society

This is a spot-nosed monkey who gets his name, of course, from the whitish spot on the tip of his impudent nose. He would seem to be doing strange kind of "daily dozen."

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keys, as they are sometimes called on account of their long, dog-shaped muzzles. But it is really insulting to a dog to compare it to a baboon. No dog has such a huge, ugly head, such a swollen snout, or such cruel, cunning eyes as this unpleasant animal, and few creatures in the animal world are so savage and disagreeable. The baboons walk on all fours, as ordinary four-footed beasts do, and they swagger about with a jaunty strut and an impudent air as if they cared for nobody. This is not merely a pose. The baboon is a match for almost any creature of the wild. Even a leopard will think twice before risking a fight with one of these powerful, savage brutes; though the big crafty cat will follow in the rear of a wandering band and pounce on a young one that has been foolish enough to lag behind the rest of the party.

The Ways of the Baboon

Sometimes as many as a hundred baboons will go about together, driving all the other animals except the larger beasts of prey out of the districts they patrol. They choose high, rocky ground as their headquarters, and often make a tremendous racket with their loud barking; for they are quarrelsome creatures and always seem to be having a difference of opinion about something or other. They will eat almost anything. They hunt for eggs and will kill and eat the mother birds too if they find them sitting on the ground. They dig up roots with their fingers, turn over the stones in search of beetles, centipedes, and scorpions, seize the little lizards basking in the sun, and devour every small creature they can catch. When food is scarce, troops of them descend from their rocky fastness, like bands of brigands, to plunder the villages below. They steal wheat, fruit, corn,

pumpkins, and anything else they can lay their paws on, and will dash among the flocks of sheep and kill the baby lambs. It is not safe to go near the baboons when they are on the warpath, and village children are warned never to go out when the brutes are about.

Battle Tactics of Baboons

One thing that makes these animals so formidable is the fact that all the members of a troop will act together and help each other. They will combine in attacking or defending themselves against their enemies in a remarkable manner. If they are captured very young, they can be trained to pull carts and to do all manner of other tricks; but they are so savage and ill-tempered that few people care to keep a baboon as a pet.

The chacma, or pig-faced baboon, is the common baboon of South Africa. A full-grown male is as big as a wolf, and quite as dangerous to encounter. He has a shaggy drab coat and a small crest of stiff hairs on the nape of his neck. His feet and hands are black, but his face is a dark purplish hue with a white ring around each eye, and his tail, which he carries erect in an independent fashion, has a curious kink in the middle.

The yellow baboons of East Africa have yellowish coats and pink hands and faces. They are very fierce and thievish in their ways, and do not appear to have the least fear of man. If,

when they are raiding a wheat field, the natives attempt to drive them away, the baboons will refuse to budge until they have crammed their cheek pouches with the stolen wheat. Then they will march slowly off in the most insolent fashion, and even turn back and attack the men if they are pursued.

The sacred baboons are not quite so savage and repulsive as most of their kind. A full-grown male is an imposing fellow, with an enormous

This is a chacma baboon, a most fearsome beast. Chacmas grow to be very big, and when they are angry are almost as dangerous as lions.

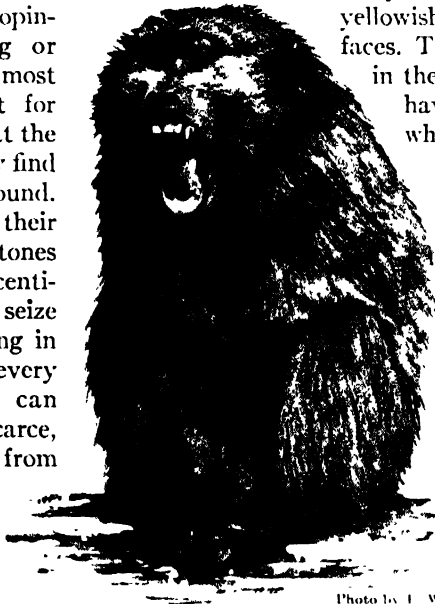


Photo by I. W. Bond

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Photo by American Museum of Natural History

This horrible creature is a male mandrill of Western Equatorial Africa. His nose is a bright red and his

gray mane falling from his head and shoulders. He moves with a proud and majestic air, as if he were aware that although no one now pays him any respect, the ancient Egyptians used to look upon him as a sacred animal.

Sacred baboons live in Arabia as well as in Abyssinia and the Sudan. Like other baboons they prefer the open country and high rocky ground; but in dry weather large troops of them come down and wander by the banks of the river to feast on the berries growing on the bushes by the waterside. They march along in a regular procession, the tiny ones riding on their mothers' backs, the bigger children trotting beside them, while the old and dignified males lead the way. Occasionally, however, some of the youngsters are sure to lag behind and begin squabbling over a nice crop of ripe berries they have found. Then, hearing the commotion, one of the grave leaders of the party turns back, and after soundly cuffing the

swollen cheeks are blue. Notice his great fangs, with which he can kill his fierce enemy, the leopard.

greedy little ones, he sits down under the bush and eats up the berries himself.

The largest of all these creatures is the mandrill, or rib-nosed baboon, that lives in the wilds of West Africa. He is a most extraordinary-looking beast with an enormous head which appears to have been daubed with all the colors of the rainbow. His nose is bright scarlet, his cheeks are covered by swollen sausage-shaped lumps with blue and purple ridges, and his chin is adorned with a stubby yellow band. But this is not all. When he turns his back on you, the mandrill is just as startling an object. His tail, which is nothing but a stump, is set high on his back, while the large bare patches of skin on his hind quarters are a glowing purplish red!

The female is not so brilliant as her mate. She has the same peculiar nose ridges, but her complexion is a plain dark blue instead of being striped with various hues.

MAMMALS

Reading Unit No. 3

INTERESTING AMERICAN MONKEYS

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

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The five-handed spider monkeys, 4-262-63
Popular pet monkeys, 4-263-66
A monkey that prefers clean peo-

ple, 4-264
The howlers, 4-265-66
The squirrellike marmosets, 4-266-67
The "night-walking ghosts," 4-267-69

Things to Think About

Why is the tail of an American monkey called a "fifth hand"?
Why are woolly monkeys so warmly clad in fur?
What monkeys look very much like human beings?

How are marmosets treated in Peru?
What are the night habits of the lemurs?
Why do some monkeys "eat" their tails?

Picture Hunt

Why do we sometimes say that the spider monkeys have five hands? 4-263
Which monkey acts like a "snob"? 4-264
What often keeps South American explorers awake at night?

4-264-65
How can the slender loris hold on to a thick branch? 4-267
How does the slow loris manage to catch its victims? 4-268
How is the aye-aye treated by the natives? 4-269

Related Material

Besides the aye-aye monkeys, what others receive special

treatment from human beings? 4-255, 256, 259

Leisure-time Activities

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PROJECT NO. 2: Find in books and magazines pictures of American monkeys.

Summary Statement

Some American monkeys have tails so skillful that they are called a "fifth hand." They can-

not stuff their cheeks because they lack the pouches of their European and African relatives.

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The Senegal galago is sometimes called the "bush baby" because of its soft silky hair and enormous jewellike eyes. Galagos have folding ears; but since they can fold only one ear at a time, they look very quaint during the process.

Photo by N. Y. Zoological Society

INTERESTING AMERICAN MONKEYS

If We Have No Apes or Baboons, We Have Plenty of Spider Monkeys, Capuchins, Squirrel Monkeys, Owl Monkeys, Howlers, Marmosets, and Other Fellows with Queer Names, Queer Faces, and Queer Ways

THERE are no manlike apes and no baboons in the New World, and the odd little monkey folk who live in South and Central America are different in many ways from their Old World cousins.

American monkeys are smaller, as a rule, than the monkeys in Africa and Asia. They have broader noses, and flatter, more human-looking faces; and they never have cheek pouches to stow away their food in, or hard bare seat pads to sit down on. Then American monkeys—or a great many of them—have the most surprisingly useful tails, which they use quite as much as their hands and feet when they are climbing about in the trees. This is a thing that no Old World monkey can do. So if ever you see a monkey swinging by its tail, you may be quite sure that monkey is a native of America; but if, while its tail hangs down behind in the usual way, the little creature is busily engaged cramming its cheek pouches with nuts and cakes, it most certainly is a visitor from across the sea.

The most remarkable tail of all is owned by the spider monkey. It is twice as long as the little animal's small slim body, and

quite as useful as its long, spidery arms and legs. With *five* hands to serve it, the funny little monkey can do several things at the same time with the greatest ease. It can hold the fruit it is eating comfortably in one hand, while it climbs about in the tree tops and stretches out a hind paw to pick more fruit as it swings itself along. The fidgety tail can never keep still. It wriggles and twists and curls, forever seeking something to take hold of, while the tip of the tail, which is like a finger, twitches and feels everything it comes in contact with.

In one way the spider monkey is like the African guereza. He has no thumbs on his two forepaws. But he does not need them. He just curls up his four long fingers and hooks himself on the boughs of the trees, instead of grasping them as a monkey that had both fingers and thumbs would do.

The red-faced spider monkey, or coaita (kō'i-tä'), of Brazil and Guiana is one of the best-known of these little monkey folk. It is a friendly little creature, and may often be seen with several merry companions disporting itself among the topmost branches of the highest trees in the forests. There in

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the swaying tree tops, ever so far from the ground, these little monkeys are quite at their ease. They can walk upright, just steadying themselves with a hand or a tail as they step lightly from bough to bough. They can take flying leaps from tree to tree and swing for hours by their tails with their long lanky legs stretching out at all sorts of odd angles from their little bodies. Baby spider monkeys cling to their mothers' backs with legs and tails while they are carried safely through the mazy branches of their airy homes, but the little creatures soon learn to move about by themselves, without falling to the ground. Even if one of these monkeys does slip from its perch, it will check its fall by clutching a branch with its tail as it whisks through the air, and no great harm will be done.

A Pet Any Child Would Want

The natives of Brazil often make pets of these spider monkeys. The little animals are never cross and surly, like so many other monkeys, and are not always getting into trouble like the mischievous grimacing monkeys and the banders of the Old World.

They are very affectionate too.

They love to be petted and made much of. And if they are folded they will hold their hands before their eyes, rock themselves backward and forward, and cry like a child until taken into favor again.

Besides the little red-faced fellow there is the black-faced spider monkey and a hooded spider monkey that has a shock of long hair surrounding its face like a hood. There is another, called a churn, that has long white whiskers; while the striped spider monkey, the smallest of the family, has a black coat, white cheeks, a yellow waistcoat, and a high range band across his forehead.

Another popular little acrobat of the tree tops is the capuchin (kăp'û-chîn)

monkey, sometimes called the "weeper" because it makes a funny whining noise which sounds just as if it were crying. But the weeper is not really unhappy, although it has a rather sad expression. It is a jolly little creature and a favorite with everyone.

Monkeys with Fads and Fancies

Capuchin monkeys are easy to tame, and are often kept as pets by the people of Brazil. Yet they are full of fads and fancies, and may be very affectionate with one person and very hostile to another. They are fond of the society of other animals, too, and a tame capuchin that is allowed to run about as it pleases will often attach itself to a dog, a cat, or even a pig, and embarrass its friend with unwelcome attentions. One of its chief delights is to spring on the back of its four-footed chum and make the long-suffering animal give it a ride.

There are several of these small capuchin monkeys, all very much alike in their looks and their ways. They are sturdily-built, pretty little creatures with soft fur and bright eyes. Their tails, though not so long or so accommodating as the marvelous tails of the spider monkeys, are very handy in climbing about the trees in their native forests. And although the arms and legs of a capuchin are not so long and spidery, his hands are provided with well-shaped thumbs.

First cousins to the capuchins are the woolly monkeys, stout little animals with such thick woolly coats that one might imagine they would be far

Spider monkeys are the best and swiftest climbers of all. Just think how much more easily you could climb a tree if you had long arms and legs that could curl up into almost any position, feet like hands, and, most important of all, a marvelous tail to grasp with!

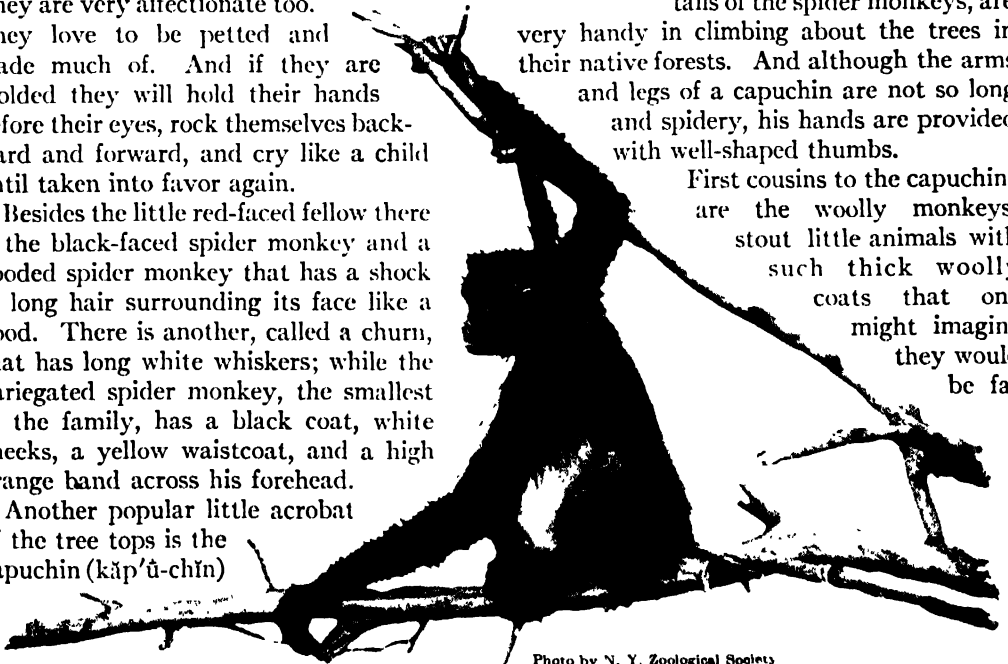


Photo by N. Y. Zoological Society

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too warm in their tropical home along the Amazon. But they are really not at all uncomfortable, for they are very chilly creatures and cannot bear the least cold. Even a rainy day makes them torpid and miserable.

With their black faces and woolly hair, these monkeys look absurdly like negroes; they are larger than the capuchins and not nearly so lively and energetic. They have well-formed thumbs and very long tails, which they can use almost as cleverly as a spider monkey. Woolly monkeys are quiet and gentle, and are quite ready to make friends with people they take a fancy to. But they are most careful as to their associates. They like clean, well-dressed people, and will have nothing to do with anyone who is dirty and untidy.

Many of the American monkey folk are so very shy that you might wander for days through their forest homes without ever hearing or seeing one of the cunning little creatures—though all the while many a pair of bright eyes would be watching you from the tangle of leaves and branches over your head.

The scarlet-faced monkeys live in the crowns of the tall trees in the swampy forests, and are so grave and silent that they seldom utter a sound. They are so difficult to keep in captivity that few people have ever seen the strange little tree dwellers. They

are all clothed with very long silky hair; and as they are broad and stout and have stumpy tails, they really look much more like tiny apes than ordinary monkeys. There is one kind, of a bright chestnut-brown with a blazing scarlet countenance, that reminds us of the orang-utan of Borneo, while another, which is quite bald and clad in shiny white fur, looks for all the world like a queer old gentleman with a very red face.

The fox-tailed monkeys are better known than their scarlet-faced brothers, for although they are delicate creatures, many of them will live quite contentedly with human folk and make themselves thoroughly at home in their masters' houses.

"Fox-tails" look a little like tiny bears, in their thick coats of long speckled gray hair; but their tails are long and bushy, like a fox's brush, and their small, intelligent faces peeping out through a mane of long hair are surprisingly human in expression. Altogether the

fox-tails are very interesting little animals.

These monkeys seldom come down from the tree tops except to drink at the pools in the forest. Most of them stoop down and lap up the water in the ordinary way, but the red-faced fox-tail monkey, who has a very fine beard and does not like to get it wet, scoops up the water in the palm of its hand. For this reason he is sometimes called the "hand-drinker" by South American natives.

But this little monkey cannot bear to be watched, and will not drink if anyone is looking.



Photo by N. Y. Zoological Society

This woolly monkey is a great favorite with everybody; but not everybody is always a great favorite with him, for, although he is very friendly and amusing to neat, well-dressed people, he dislikes people in dirty or mussed clothes!

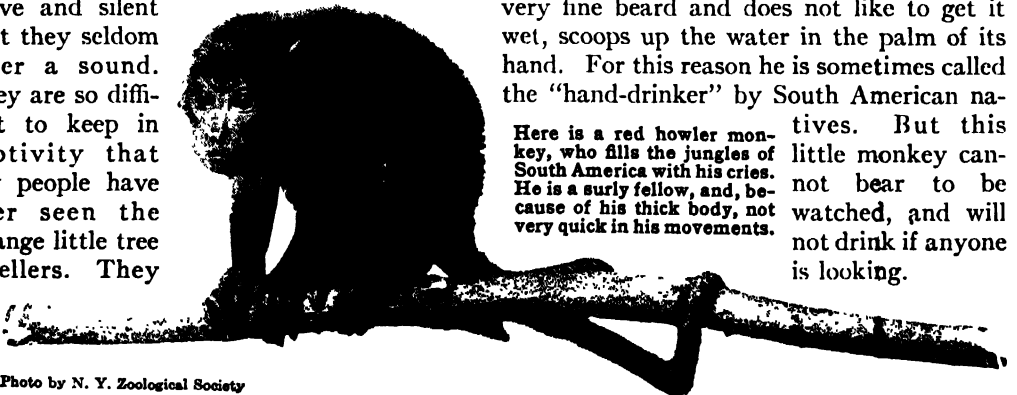


Photo by N. Y. Zoological Society

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The fox-tailed monkey is almost as silent as the scarlet-faced one, and his voice, which is seldom heard, is an unmelodious grunt. Like most American monkey folk he is fond of fruit, but best of all he loves honey. His chief joy is to rob the wild bees' nests and eat the honeycomb—and even the bees too, when they come swarming out of their nests and buzz around him. He does not mind the angry insects at all, since his long thick hair protects him from their stings.

Neither the scarlet-faced nor the fox-tailed monkeys can hang by their tails from the boughs of the trees, as do the spider monkeys and the capuchins. The tails of the scarlet-faced monkeys are far too short, and those of the fox-tailed monkeys are much too bushy to be used in this way. The squirrel monkey and the curious little owl monkey are two other forest dwellers whose tails are not made for climbing and grasping. The squirrel monkey is a delightful little animal, one of the smallest of the monkey tribe. Its fur is so soft and pretty, and its little face so like a child's that it is always a favorite with everybody. It is not spiteful and mischievous, like so many of the monkey folk, though it is very lively and full of amusing little ways. But although it is gentle and affectionate, it is not so quick to learn as are some of the bigger monkeys.

Strange Sleeping Habits

In their native woods the little squirrel monkeys scamper about the trees, eat fruit and berries, and catch insects in their tiny paws. Like most animals that live in hot countries they are very sensitive to cold; if the temperature falls only a few degrees,

several little monkeys will huddle up together to keep warm. Then the little creatures will squabble and push, and whistle and squeak, as they all try to get into the middle of the group, twining their fluffy tails around themselves and around one another to keep out the cold.

The owl monkeys are not much bigger than the squirrel monkeys. They have big bushy tails, soft gray fur, and enormous owl-like eyes. In their habits, too, these little monkeys are very much like owls. In the daytime they curl up in holes in the trees and sleep the sunny hours away. But at night they wake up and get very active and excited. Their great eyes light up, and they hiss and mew like prowling cats as they eagerly hunt for small birds and make lightning grabs at

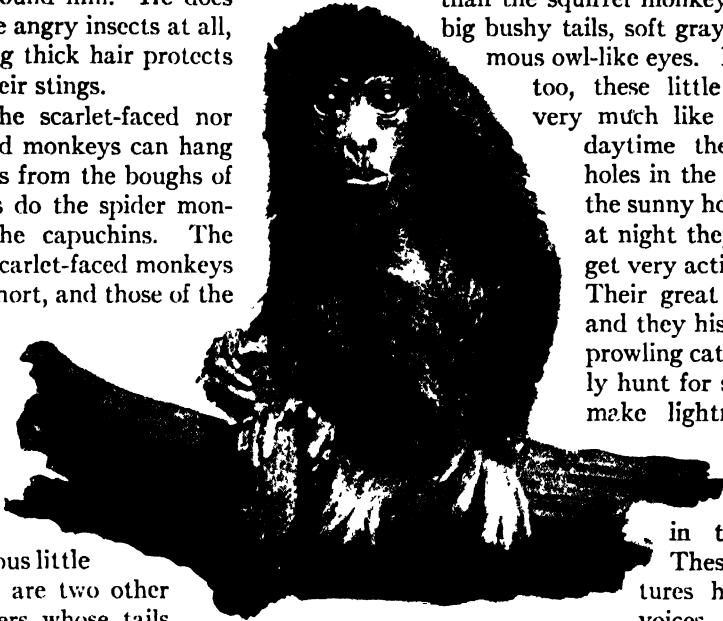


Photo by F. W. Bond

This black howler looks harmless enough. But wait till night falls! When these monkeys feel in a howling mood, two or three will get together at the very top of a tree and start a howling chorus which can be heard at least two miles away. It is not a cheering sound for a lonely traveler in the forest at night.

night-flying insects flitting by in the dim light.

These small creatures have such loud voices that their peculiar mewling cries can be heard very far away.

But the noisiest fellows in the whole of monkey land are the red howlers. Well do these big monkeys deserve their name, for bands of the creatures will often make the forests

ring with their deafening howls and yells, which can be heard for over a mile.

Red howlers are seldom quiet for a long time. By day as well as by night they lift up their bellowing voices whenever anything excites them. But it is just after sunset that the noise is most appalling, for then the bands of howlers assemble and hold genuine howling parties. One old monkey with an especially powerful voice conducts the chorus, and starts it again with his booming yells when it dies down. Now and then for a change he obliges with a solo. The howlers keep up this racket until dawn, and no one

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Photo by American Museum of Natural History

This is a family of howler monkeys in their home among the trees. No matter how much they practice, these

within earshot will get any sleep. So it is not surprising that these monkeys are unpopular with people living on the borders of South American forests where the noisy creatures are at home.

The Noisiest Monkeys in America

The howlers are the largest as well as the noisiest of all the American monkeys. They are ugly and surly-tempered, too, and in many ways are not unlike the baboons of the Old World. Troops of howlers, led by an old male, will move about up in the trees in slow processions. The leader marches ahead with an important air, followed by the younger males and several females, the mother howlers carrying their young ones on their shoulders. When the party reaches a gap between two trees the leader suspends himself from a bough by his long tail and swings backward and forward until he can clutch a branch on the neighboring tree. Then one by one the whole troop follows in regular order, with each monkey taking off from exactly the same spot and going through the same performance.

There is a brown howler and a yellow howler besides the red one. They all behave in much the same way and make the same horrible noises. Lady howlers do not, as a

animals never learn to make any sound with their huge voice boxes except one that is a discord.

rule, join in the nightly concerts given by their mates, though they, too, have harsh, loud voices and can make plenty of noise when they feel like it.

Last and smallest of the American monkeys are the marmosets (mär'mô-zët'). They are charming little animals—so pretty and soft and fluffy, and so gentle and friendly in their ways. Although they belong to the monkey tribe, marmosets are more like squirrels than monkeys. They have claws on their fingers and toes instead of nails, and they scamper up the tree trunks and run over the branches instead of climbing about in true monkey fashion. And although they have most handsome bushy tails, marmosets never curl them round the boughs of a tree and swing head downward, as so many of their cousins do.

The Inquisitive Little Marmoset

The little creatures live in small troops in the forests, like other monkey folk. They feed on fruit and insects and spiders, and catch and kill small birds, pouncing on them just as a cat would. The hottest hours of the day they usually spend curled up asleep in holes in the tree trunks; but as soon as the sun goes down they come out and scamper around hunting for something good

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to eat and playing like kittens together. They are very inquisitive little animals, and if a stranger passes below the tree where a party of marmosets are enjoying themselves, they all stop playing or eating and peer at him with the greatest interest.

The common marmoset is no bigger than a rat, though its soft thick fluffy coat makes it look twice as large as it really is, and its fine bushy tail is nearly a foot long. Its fur is a soft grayish color, with darker bars on the back and thighs; on the top of its funny little nose is a large white spot; a fan-shaped tuft of long white hairs stands out on each side of its face, while its tail is ringed with bands of black and white. This quaint little animal is a native of Brazil.

The pigmy marmoset, which is sometimes found as far north as Mexico, is smaller still. It is a dainty little creature dressed in rusty brown, with very long brown whiskers brushed tidily back over its ears. Then there is a negro marmoset, which is quite black with a very hairy face; an emperor marmoset, distinguished by a fine pair of curly moustaches which give the little animal a most aristocratic air; besides several others, all charming little creatures with engaging ways. But the prettiest one of all is the lion marmoset, which has the most beautiful silky coat of golden yellow shaded with orange, and a long flowing mane of darker hair covering its shoulders and making it look like a toy lion.

A Queer Place for a Perch

Although not quite so intelligent as many other monkeys, marmosets make charming pets. But they are extremely delicate and must always be kept very warm. The little creatures cannot stand a breath of cold.

They like plenty of company, too, and if left alone for long they grow mopy and miserable. They soon learn to know their own master and will climb up on his shoulder and chatter in his ear, but they will hiss with alarm if a stranger attempts to touch them. The Indian women in Peru are very fond of these tiny monkey folk, and sometimes carry one about perched on the top of their heads, hidden in their thick, fuzzy hair. There the little marmosets are

quite warm and comfortable, and never attempt to run away. When they are hungry they just hop out, catch a spider or two, or eat a little fruit, and then scamper back to their nests again.

Before we say good-bye to the monkey folk and all their curious ways, we must not forget to notice the lemurs (*lě'mūr*), an odd race of little animals which are not actually monkeys but are more nearly related to them than to any other kind of animal. So they have to be included in the monkey tribe.

To make their acquaintance we must sail across the sea to the island of Madagascar, for that is where all the lemurs are to be found—though a few other

strange little creatures very much like them make their homes in Africa, India, and the East Indian islands.

Lemurs are small animals with foxlike little faces and great big eyes that shine like a cat's in the dark. Their legs are much longer than their arms, and that makes the little creatures walk in a funny humped-up way when they are moving about on all fours. Their hairy little paws, which are much more like hands than feet, have thick flat nails on all their tiny fingers, except on the second fingers of the hind paws. These are provided with long curved claws, which the lemurs find very useful for scratching and for combing their thick fur whenever it gets matted or tangled.



Photo by F. W. Bond

The slender loris is an enchanting little creature only eight inches long. It has large, luminous eyes and a peculiarly innocent expression. As you can see in the picture, its thumb is set far away from the other fingers—which is probably Nature's way of making even a tiny hand capable of grasping a large branch.

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The name "lemur" means "a night-walking ghost," and this name has been given to the little creatures because they make no sound as they move stealthily about the branches of the forest trees at night, with their great eyes gleaming in the darkness with a ghostly light. Only a few lemurs are out and about in the daytime. Most of them sleep away the sunny hours curled up in a hole in a tree, or rolled up in a furry ball in the fork of a bough; but as soon as it is dark the lemurs wake up and prowl stealthily up and down through the tangle of swaying branches, hunting for something for supper. They eat fruit and all the insects and spiders they can find, rob birds' nests of their eggs, and kill sleeping birds and little tree frogs and lizards. Then when the day begins to break, the "night-walking ghosts" creep stealthily back to bed.

A Little Monkey with a Big Voice

But lemurs are not always silent. Indeed, some of the animals are exceedingly noisy at times. The ruffed lemur has a tremendous voice for its size, and it roars so loudly early in the evening when it is setting out for its nightly rambles, and again before retiring to rest in the dawn, that you would think some huge beast of prey must be prowling around on the warpath. This lemur is one of the largest of its kind. It is about as big as a

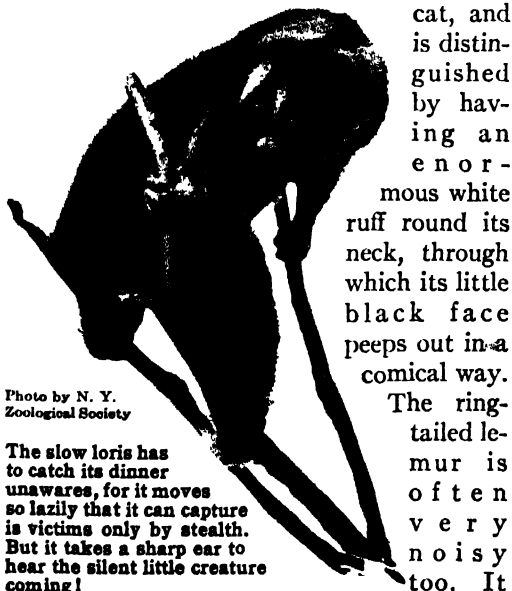


Photo by N. Y. Zoological Society

The slow loris has to catch its dinner unawares, for it moves so lazily that it can capture its victims only by stealth. But it takes a sharp ear to hear the silent little creature coming!

cat, and is distinguished by having an enormous white ruff round its neck, through which its little black face peeps out in a comical way. The ring-tailed lemur is often very noisy too. It

is a pretty creature with a soft, gray

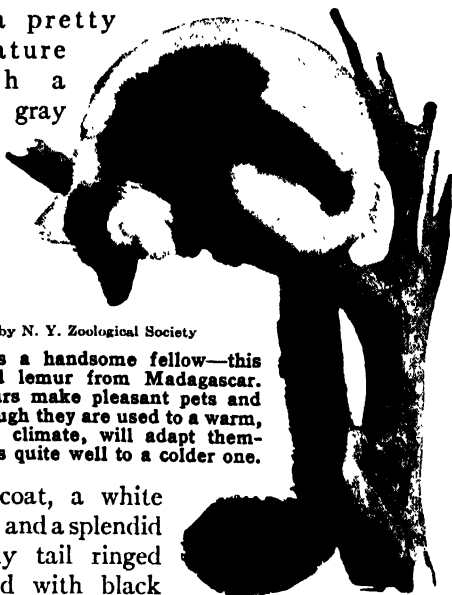


Photo by N. Y. Zoological Society

He is a handsome fellow—this ruffed lemur from Madagascar. Lemurs make pleasant pets and although they are used to a warm, damp climate, will adapt themselves quite well to a colder one.

fur coat, a white face, and a splendid bushy tail ringed round with black and white. When

it is pleased, this lemur purrs like a cat, but when it is going hunting it rouses the neighborhood with loud piercing cries.

Ring-tailed lemurs live in small troops among the rocks of Madagascar, instead of up in the forest trees where most lemurs stay. The palms of their hands and the soles of their feet are very long and smooth and leathery, so that they are able to climb about over steep, slippery rocks and keep their footing without any trouble—very much as a fly walks up a windowpane. They usually take a little rest during the hottest hours of the day, and when they have finished their hunting at night they huddle up close together and go to sleep with all their tails curled round about the group to make a cozy covering.

The Tiny Dwarf Lemur

There are ever so many of these interesting little creatures, but they are all very much alike in their ways. There is the slim little "weasel lemur" that bounds about in the tree tops and takes the most astonishing leaps from one tree to another; and the "gentle lemur" that lives in thick tangled bamboo jungles, where it is difficult to catch even a glimpse of the shy little thing.

Smallest of all are the "mouse lemurs." One of these, called the "dwarf mouse lemur,"

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is only four inches long, though its tail measures as much as six. This tiny creature makes a very neat little nest of twigs right at the top of the tallest tree. The nest is cozy lined with hair and is a cradle for the baby lemurs as well as a resting place for the parents in the daytime.

All mouse lemurs build nests like this, and in the hottest time of the year they curl themselves up inside their nests and go to sleep until the return of cooler days—just as in colder parts of the world many animals will put themselves to bed for the winter months.

When first they go to sleep the lemurs are as fat as butter and their tails are swollen out to an enormous size, since for some time beforehand they have been preparing for their long fast by eating as much as they possibly can. But when the hot season is over and they wake up again, the tiny creatures are quite thin and their tails have dwindled to their ordinary dimensions.

The African lemurs are called galagos (gā-lā'gō), or bush babies. They are delightful little furry animals with bushy tails and big shining eyes. Bush babies are easy to tame and they make charming pets, since they have gentle manners and most amusing ways. When allowed to run free about the house they will scamper in and out of the rooms, run up the curtains, make quick darts at flying insects, and catch them with their tiny hands.

In India and Ceylon the "slow loris" takes the place of the true lemur. This is a weird little creature about as big as a rat, and so thin that it is like a living skeleton and deserves the name of "wandering ghost" far

more than the plump lemurs of Madagascar do.

In the daytime the slow loris rolls itself up into a ball, tucks its head between its legs, and clings to the bough of a tree with its skinny arms. But at night the queer little creature comes to life and creeps slowly and silently along the branches like a moving shadow, its great eyes gleaming with a fiery glow as it turns its head from side to side, seeking for something to kill and devour.

But the strangest animal of all is the aye-aye (ī'ī') of Madagascar. It looks somewhat like a lemur, a fox, and a squirrel all mixed up together. Its hind limbs and paws are rather like a monkey's, but the fingers on its hands are long and bony and all of different sizes. The middle finger, which is much longer than all the rest, is like a piece of bent wire, and the aye-aye uses it to hook grubs and insects out of cracks in the bark of trees.

All day this puzzling creature lies curled up in a hollow tree, but at night it prowls around in search of food, and then its spook-like eyes, shining in the darkness, are enough to scare anybody who walks late in the gloomy forests.

The natives of Madagascar have all sorts of superstitious beliefs about the aye-aye, which is really a most harmless animal. They say if you touch one, misfortune will surely follow. They tell you, too, that if a man falls asleep in the forest, the aye-aye will bring him a pillow. If it puts the pillow at his head the man will become rich and powerful; but if the aye-aye places it at his feet bad luck will follow him forever afterward.

This strange little creature with the overgrown tail is the aye-aye, which commands so much respect in Madagascar. If the natives catch one by mistake, they try to apologize by greasing it all over and setting it free again.



Photo by F. W. Bond

MAMMALS

Reading Unit No. 4

MAMMALS THAT LIVE ON INSECTS

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

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Why do bats sometimes fly around your head?

Why are vampire bats disliked

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How are moles fitted for constant digging in the earth?

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Summary Statement

Bats are the only mammals that can really fly. They are not birds, for they are covered with fur and nurse their young. Bats live mostly on insects, and fly

after them at night. In the day-time bats hang upside down, asleep. Moles have feet like shovels and dig in the earth for worms and insects.

MAMMALS THAT LIVE ON INSECTS



of Natural History

This strange foliage is largely made up of a swarm of Philippine fruit bats which have put themselves to bed for the day. All they have to do after a pleasant night

spent in robbing somebody's orchard, is to find a handy tree and hang themselves up by their feet head downward. They are very sociable!

MAMMALS THAT LIVE ON INSECTS

*Can You Guess? You Have Seen Him Many a Time; but You
May Here Meet Some of His Big and Little Relatives
Whom You Have Never Seen*

UP AND down the lawns, round about the houses, over the tree tops, the "flittermice" skim and sweep through the air like little gray shadows in the twilight, just when the twittering birds are fussily putting themselves to bed. There are very few places in the world where we cannot find them, of one kind or another, and very few parts of any land where they cannot manage to get a living and find some cozy corner to sleep in. Not only in the heart of the country, but on the borders of busy towns—in gardens, in parks, in fact in any region where there is a place to hide and plenty of insects to eat—you may see them, brown bats, gray bats, red bats, or silvery bats, flitting about in the dusk, hawking after fat moths and beetles that fly by night, and snapping up the gnats that dance in merry swarms after the sun goes down.

But it was no use looking for bats in the daytime. Then they are all fast asleep in hollow trees and caves, or tucked away in all sorts of odd nooks and crannies in old buildings, barns, haystacks, and church towers, where no one can see them. They are the sleepest of little creatures. Even in warm spring and summer days they spend some twenty hours out of every twenty-four drowsing their wits away. Then when winter comes they stay at home altogether and never leave their shelter for months at a time—unless a very warm day tempts them out for a short flight, just to see if there are any insects about.

No one could ever mistake a bat for any other kind of animal, for a bat is the only warm-blooded, four-footed creature living that owns a pair of wings and is able to fly. These wings are not feathery like birds'

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wings; they are just two large flaps of leathery skin stretched between the bat's extraordinarily long, bony fingers, which look like the ribs of an umbrella. That is why bats are called "hand-winged" animals. To open its wings the bat spreads its fingers wide apart, and to close them it brings its fingers close together again.

The Graceful Bat

Only a swallow can rival the ease with which this small furry creature swoops, twists, turns, and wheels in the air without pausing in its flight, and no bird is more graceful or skillful on the wing. A bat can thread its way in and out of the tangled branches of the trees without so much as brushing a leaf or a twig with its outstretched wings. Since the bats can fly just as well on a pitch-dark night as in the dim twilight, they are clearly not guided by sight alone in these maneuvers. The marvelous little creatures seem to have a sixth sense. What they really have is such delicate sense organs in their wings and faces that they can guide themselves past all obstacles by merely feeling the pressure of the air.

On the ground, however, a bat is badly handicapped by its hand-wings and by the peculiar shape of its hind legs, which are joined to its wings and its tail and so twisted round that the knees are bent backward. This, of course, makes walking an exceedingly difficult thing, and at best the bat can only succeed in flapping and shuffling along on its elbows and queer hind legs in a decidedly awkward fashion.

But the ground is not the proper place for a bat. It finds itself there only by accident. When it is not chasing insects in the twilight, it hooks itself to a beam or a rafter in some dark corner. It holds on by a convenient little thumb hook on the edge of its wings, or hangs itself upside down by the claws on

its hind feet, with its leathery wings wrapped round it. Several bats choose the same sleeping quarters, as a rule, and hang themselves up together in a bunch; and a great deal of squeaking and pushing and elbowing goes on before the funny little things are all comfortably settled for the day. Hundreds of bats often live together in an old ruined tower or in a cave, and come pouring out late in the evening like a swarm of gigantic bees. They are terribly upset if they are disturbed in the daytime; they flutter about in a bewildered way and try to crowd into the darkest corners they can find; for although bats are not blind, as many people imagine, their eyes are rather weak and they are dazzled by strong sunlight.

Bats never make nests, or provide any special accommodation for their young. But as she hangs by her heels in some quiet dark corner, the mother bat nurses her baby,

folding her wings round it to make a kind of cradle for the tiny, helpless thing; and she feeds it with her own milk, as all of the other mammals do.

As soon as it can cling tightly to her fur, the mother bat goes out hunting in the evening as usual, carrying her baby with her as she sweeps high over the tree tops and darts this way and that way after night-flying insects; and the baby bat is none the worse for its adventures. At times the old bats will leave their youngsters hanging in the trees, safely sheltered under the leaves, while they fly around by themselves for a bit, and call back for the children on their way home again. So the young bats get their first lessons in flying and independence, and as soon as they are strong enough the tiny creatures set out in the evenings on their own little wings.

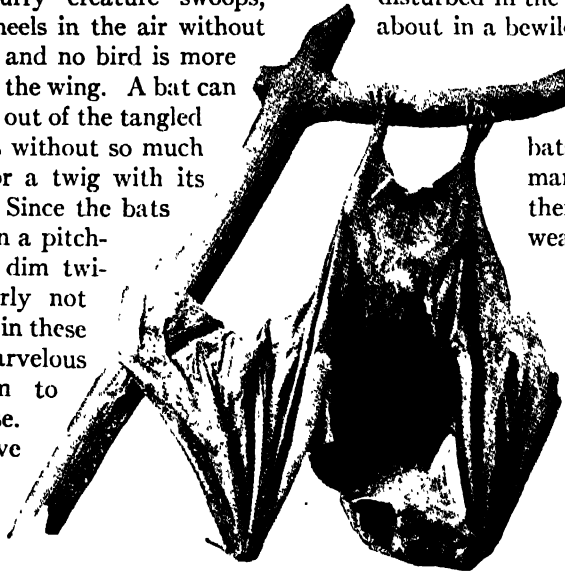


Photo by Field Museum

No, you are wrong if you think this picture is upside down. It is just the flittermouse's favorite sleeping position. This particular fellow has a long nose and is known as a Mexican spear-nosed bat.

MAMMALS THAT LIVE ON INSECTS

Here is a whole family of red bats which have taken shelter on a dead branch. If you look very carefully you will see that, besides the father and mother, there are three tiny bats clinging to the wood.

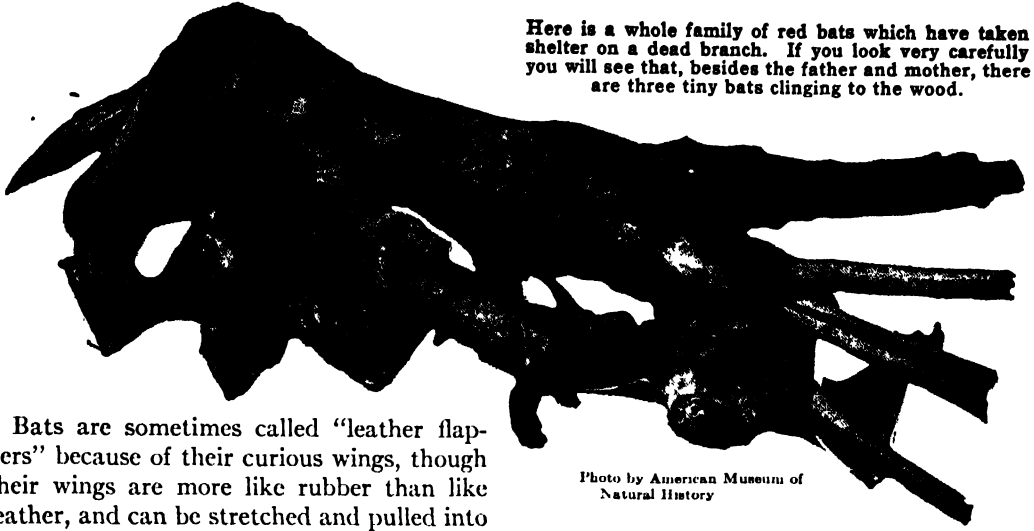


Photo by American Museum of Natural History

Bats are sometimes called "leather flappers" because of their curious wings, though their wings are more like rubber than like leather, and can be stretched and pulled into all sorts of shapes when the little creatures are having a good clean up. The bats are very careful about their toilet; they comb their fur and scratch their ears with their thumb hooks, lick their wings all over, and even lick their paws and rub them over their heads and ears as cats do when they are washing themselves.

The old name "flittermouse" is a much prettier one than "leather flapper," and it suits the smaller bats much better, for they really are like mice that have been fitted with wings in some mysterious way.

A Midget Hobgoblin

The little brown bat—one of the smallest and commonest bats of North America—is smaller than a field mouse, though when its wings are spread it looks much larger. Its tiny body, which is clothed with glossy brown fur, shading to a pale yellowish underneath, is as soft and pretty as can be, but its queer, puckish little face with its wide mouth, pricked-up ears, and beady eyes makes it look just like a wicked little hobgoblin; and if you disturb the little creature's slumbers it will blink and snap at you in a spiteful way that is really most alarming. Probably it is because they look so impish and do not get up until most well-behaved creatures are going to bed that bats have such a bad name and so many people are afraid of them. But they are really the most gentle little folk, and do no harm to anybody. They are

friendly and useful, too, when you take a walk on a hot summer's night, for they will often follow you and gobble up tormenting flies and midges that dance so madly round and round your head.

The large brown bat is very much like its little namesake, but it is so much bigger that you could never mistake one for the other. It is quite common all through the Southern United States as far north as Carolina, but it gets up so late in the evening that few people are acquainted with it. Both the big brown bat and the little brown bat, however, will sometimes come in at the window after the flies that are attracted by the lights on hot summer nights; and in late autumn a large brown bat may come indoors, hide itself in a curtain, and scare people by coming out and swooping round the room after everyone has gone to bed. But the bat means no harm, he only wants to go hunting, and what he is really looking for is an open window.

The Ways of a Red Bat

In certain sections the red bat is almost as common as its larger brown cousin. It flies earlier than most bats, and so sometimes it is possible to see the bright rusty-red color of its fur as it zigzags overhead in pursuit of its insect prey in the evening light. You may sometimes attract this bat by tossing small stones into the air; for the eager little creature may mistake the stones for plump

MAMMALS THAT LIVE ON INSECTS

insects and dive after them almost to the ground.

Red bats have dark caves for shelter in the daytime, and hundreds often occupy the same cave, clinging together in furry bunches suspended from the roof. But if there are no caves round about, the bats will take possession of a loft or squeeze themselves under a house roof through broken tiles or cracks in the brick work. At the approach of winter the red bats move down south as far as Texas and Northern Florida, but they come back to their northern homes like birds in the spring.

Another little migrant is the silver-haired bat, which is quite as familiar as the red and brown bats in the northern part of the United States. This little flitter-mouse is fond of the water-side and flits up and down over the streams and rivers, and round about ponds and lakes, putting itself to bed in some hollow tree before daylight dawns.

In Kentucky and South Carolina there is a very curious little bat with enormous ears which stand upright on its head like a donkey's ears. These are so raised as the bat flies about long after the sun goes down. But when it goes to bed the long-eared bat carefully folds up its remarkable ears and packs them away under its wings; and all you can see is an oddly shaped little bundle hanging up in a corner of the old tower or barn it has chosen for its sleeping quarters.

Queer Bats of the Old World

In the Old World many of the small insect-eating bats are so much like their cousins in America that we can hardly tell them apart, but there are many others with such queer faces that we can hardly believe they are real animals when we see a stuffed specimen in a natural history museum. These bats are called "leaf-nosed" bats and "horseshoe" bats because they all have peculiar flaps of

skin in front of their noses, of different shapes and sizes. Some of them look like leaves and horseshoes. Some of the "nose leaves" are so large that they seem like comic masks in front of the animals' faces. Strangest of all is the "flower-nosed bat" that lives in the Solomon Islands, for the ornament at the end of its nose is like a large rosette which covers the whole of its face. Only the wide mouth of the bat can be seen beneath this "nose-flower," with two wicked eyes peering

out one on each side of it.

The leaf-nosed bat folk live in Africa, Asia, and Australia, though some of the horseshoe family are natives of Europe. There are leaf-nosed bats, too, in tropical America, and one or two of them pay occasional visits to the United States.

The American leaf-nosed bats are not quite the same as those in the Old World. They belong to the famous vampire family of which so many blood-curdling tales are told. The true vampires certainly do suck the blood of live animals when they get a chance, and if they catch a man asleep they will sometimes puncture his toe with their sharp teeth and suck his blood. But vampire bats are not nearly such deadly creatures as many people imagine. They do not kill people, though sometimes fowls and domestic animals may die from weakness if these blood-thirsty bats visit them night after night and attack them in this horrid way. So when a South American farmer finds any of his birds or animals growing weaker and weaker, in a mysterious manner, he will keep a sharp lookout for vampires.

But although the vampire bats, like leeches and mosquitoes and other unpleasant creatures, do like a meal of fresh blood when they can get it, they do not often have an opportunity of satisfying their vicious appetites by sucking the blood of human beings, and for the most part they live on insects and fruit, as other bats do.

All the bats we have talked about so far are called "insect-eating bats"—though some eat fruit as well as insects, and a few, as we



Photo by British Museum

This timid little animal that is peering awkwardly from behind a tree trunk is called a javelin vampire bat. It is a harmless creature, although the name is rather misleading.

MAMMALS THAT LIVE ON INSECTS



This is the commonest of the English bats, the pipistrelle—and a very lively fellow he is. He flies swiftly and can make all sorts of quick turns and sudden dives which help him tremendously in catching insects for his supper.

Photo by
Alinari

The pipistrelle bat is quite hardy. He will leave his winter quarters early in the spring and not return to them until late in the fall. His family is a large one, for he has many cousins almost exactly like him spread over every country of the world.

know, vary their diet by sucking blood. But in the warmer parts of the Old World there are a number of very large bats, called "fruit bats," that live almost entirely on soft fruits and field crops of various kinds.

Fruit bats never have nose leaves or any other odd arrangements on their noses; and although they have extraordinarily long "hand wings," they do not fly with the rapid zigzag movements of a flittermouse. They have foxlike faces, with long pointed muzzles, small pointed ears, and bright, cunning eyes. They have reddish fur coats, and altogether look so much like real foxes which by some mistake have been fitted with wings that most people call them "flying foxes."

The Malay flying fox, the largest of all the bats, is as big as a crow, and its enormously long, pointed wings measure as much as five feet across from tip to tip when they are outstretched. As it flies overhead in the evening, slowly flapping its great wings, it looks like one of those monstrous creatures, half bird, half animal, that lived in the world in those far-off days, so many ages ago, when no man was here to see.

The Indian Flying Fox

The Indian flying fox, though not quite so large, is very big for a bat. It measures fully four feet across its wings. All over India, Ceylon, and Burma it is quite a common sight to see long processions of these queer animals passing high overhead in the dusk, all going in the same direction. They are off to their feeding grounds, and they often fly long distances to orchards and plantations where the trees are heavy with ripe fruit. Then the whole company descends, settles on the trees, and feasts throughout the night.

When they are feeding, the flying foxes hang from the branches of the trees by one foot, stick the claws of the other foot into the fruit they fancy, just as if the foot were a fork, and, holding the fruit so, eat it at their leisure.

How a Bat Goes to Bed

Just before dawn the bats cease eating, one by one, and wing their way home to the trees where they are in the habit of passing the day. Several hundred bats will often live in the same tree, and great is the commotion before they all finally settle down and go to sleep. All the bats want the highest and most sheltered places, and they squabble and fight, claw one another with their thumb hooks, and cackle and shriek until the sun is high in the sky. At last, when they have all arranged themselves as comfortably as possible, every branch is laden with flying foxes hanging upside down by their hind claws, with their great wings wrapped around them, and from a distance the bat tree looks for all the world like a Christmas tree covered with oddly shaped parcels!

There are many fruit bats besides the flying foxes; some with very long tongues to lick out the contents of the soft, juicy fruit without picking it off the trees, or to sip the honey from tropical flowers; some with a pair of funny little tubes on the end of their noses, though of what use these tubes are to the creature we really cannot say. In Africa there is a queer tribe of bats with heads like the horses' heads of the knights in a set of carved chessmen.

Among the insect eaters too, there are many wonderfully colored bats. The Indian plantain bat has an orange-colored body, and

MAMMALS THAT LIVE ON INSECTS

This is a flying fox, or fruit bat. The Arabs call them "the devil's birds" because they are such noisy, smelly animals.

These bats fly with slow, sweeping strokes of their wings. Sometimes several dozens of them can be seen moving across the evening sky.

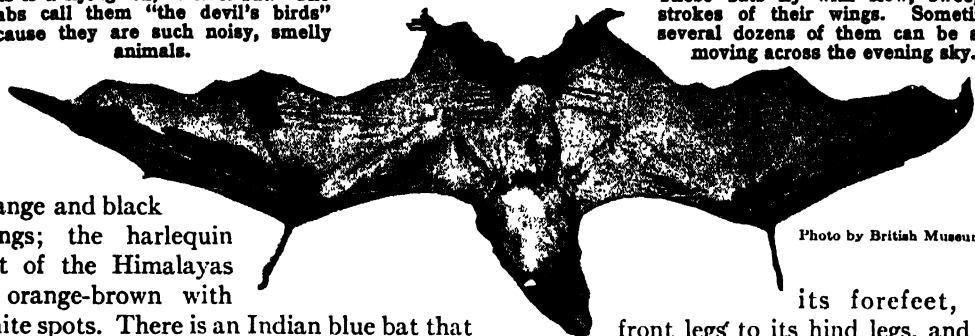


Photo by British Museum

orange and black wings; the harlequin bat of the Himalayas is orange-brown with white spots. There is an Indian blue bat that preys on smaller bats as well as on small birds and frogs; an African bat whose wings and back are covered with an orange powder which makes it look like a big yellow butterfly when it is flying in the soft evening light. But as there are nearly five hundred kinds of bats scattered about the world, we cannot possibly meet all of them, else we should have no time left to give to all the other interesting four-footed creatures in the animal world.

First Cousins of the Bats

Bats are such peculiar animals that they have to be placed in a special order all by themselves; and after the bats come a number of strange little wild folk classed as "insect-eating mammals." Most of the insect-eating tribe look very much like rats and mice; but really they are more like bats in many ways, although of course none of them have wings. One of them, however, called the cobego (kô-bê'gô), or "flying lemur," has a wonderful parachute with which it can take long flying leaps and skim through the air from one tree to another.

This animal is a native of the East Indies. It is about as big as a cat and has a sharp-looking little head with a pointed muzzle, rather like the head of a lemur. Its fingers and toes are provided with sharp hooked claws with which it hangs itself up in the tree in the daytime just as bats do, and when it is resting in this way it is a most difficult little creature to see. Its soft furry coat in its color and marking is almost exactly like the rough bark of the tree to which it clings.

But the most remarkable thing about the flying lemur is the skin on each side of its body, which, in wide folds, joins its neck to

its forefeet, its front legs to its hind legs, and its hind legs to its tail! This arrangement makes a most excellent parachute. The little animal has only to stretch its legs wide apart and its gliding apparatus is ready. Then launching itself from a tree it sails through the air to another branch, maybe sixty yards or more away. Of course the cobego cannot fly upward; it is only able to take long sweeping leaps, in a downward direction, while its natural parachute sustains it in the air and keeps it from falling to the ground.

The rest of the "insect-eating" order of animals is made up of the moles, the shrews, and the prickly hedgehogs. With the moles and the funny little shrews most of us are well acquainted, for they are to be found in nearly all parts of the world, except Australia and South America; but the hedgehog is a native of Europe and the temperate parts of Asia and Africa, and has no close relatives in the New World.

At one time or another nearly everybody must have seen those untidy heaps of earth over fields and meadows, and even on the lawns—much to the annoyance of the gardener. These little humps and bumps are the work of the mole—the industrious little creature in gray velvet who lives underground and spends his days busily burrowing in the soil and flinging up the loose earth in little mounds behind him as he goes. He is always in a desperate hurry. He works as if he had not a minute to spare, and in a few hours' time he will tunnel his way from one end of the lawn to the other or go right across a small field.

The reason the mole works in such a frantic way is that he is about the hungriest little animal in the world. He can never get

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enough to eat. If he is kept without food for twenty-four hours the little creature dies of starvation. So all his life long he is fated to dig and scramble and worry his way through the ground, hunting for the creatures that lie buried in the soil—and the number of wriggling worms and fat grubs he gobbles up in a day is simply amazing!

If you look at the portrait of the gentleman in velvet you will understand how he is able to tunnel his way underground at such express speed. He is made for the job. His long pointed snout is as good as a gimlet for boring a way through soft mould. His broad flat forepaws, armed with strong claws, make perfect tools for "swimming" through the earth, while the thick soft fur that clothes his plump, bolster-shaped body is as fine and close as velvet and in no way hampers his progress as he scrabbles along in the dark in his unending quest for food.

Of course the mole is often a terrible nuisance. He spoils no end of smooth lawns and golf links with his untidy heaps of mould, while his tunnels disturb the roots of growing plants and sometimes do much harm to field crops. Nevertheless, to give the little animal his due, he does a great deal of useful work in destroying quantities of harmful insects, and in this way he is a real friend to the farmer and gardener.

The Home of a Mole

Besides the heaps of earth he throws up in his mining excavations, the mole constructs a wonderful underground fortress, with a firm rounded molchill above it, to make a strong roof for his house. Under this hill a good-sized living room is hollowed out, with several entrances, and surrounded by a maze of passages and galleries. Whenever the mole wants to leave his fortress he

pops through one of the doorways, runs up a side passage, then round a gallery, down another passage, and maybe all around a second gallery before he is fairly outside his premises. Owing to this cunning arrangement, if a weasel should find his way into the fortress the mole has many bolt holes through which he can slip out and escape, while his enemy is chasing up and down the bewildering passages and winding galleries.

This fortress is chiefly for winter use. All through the summer the mole is too busy to stay at home much; he is always hunting around for something to eat. A long, straight high-road, like an underground railway tunnel, runs from the fortress for some distance through the ground, and from this many side streets branch off in all directions. The walls of his streets are always

falling in, and the energetic little animal is kept busy clearing them out again and making new ones. Of course since it is perfectly dark in this underground town, the mole cannot see the creatures he is perpetually hunting. But this does not matter. He has a remarkably keen nose and he smells them out. He makes straight for his prey, hurling himself furiously through the soft soil, sweeping it to right and left with his spadelike hands.

When winter freezes the surface of the ground and makes it too hard for the mole to tunnel in, he stays at home for longer spells and keeps himself warm by rolling himself up in a bundle of dry leaves and grasses which he has dragged down below to make a comfortable bed. But even in the winter a mole must eat. He cannot stuff himself in the autumn with enough food to keep him alive, as a dormouse and a mouse lemur can. So the little animal is forced to leave his bed now and then, to burrow deeply



Photo by American Museum of Natural History

The earth has been cut away so that you may see our mole in his underground home. He is looking for insects and worms, although "looking" is not quite the word, for he is almost blind and lives in the dark, besides.

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in the ground in search of worms which have been driven down below by the hard, frosty weather.

But this is weary work for the poor mole. And he must be happier when warm days come again and he can scuttle along through the soft mould just below the surface of the ground, feasting royally once more on the numbers of tiny creatures that spring has roused from their winter sleep.

As he spends nearly all his life in his underground city, we seldom meet the little gentleman in velvet; but he does come up to the surface occasionally—when he is thirsty, for example; and he may come out just for a stroll in the open air now and then on a warm summer night.

Are Moles Blind and Deaf?

The mole is neither quite blind nor deaf, as many people suppose; but his eyes and ears are very poor organs, while his sense of touch is very acute. He is a rather quarrelsome little fellow, as you might expect such a quick, impatient little person to be; yet several moles often occupy the same mole town and live peacefully side by side as each goes about his own business and lets his neighbors alone. But if two strange moles meet, there is trouble at once. The angry little creatures rush at each other and roll over and over together, kicking and biting and squealing for all they are worth, until one of the combatants is forced to retire and leave his

opponent in possession of the hunting ground.

Baby moles do not live in the principal apartment of the fortress. The father keeps that for himself. But he helps the mother mole to scoop out a cozy little nursery for the youngsters near by, and stuffs it full of leaves and grass to keep them warm and comfortable.

Cousins of the Common Mole

Besides the common mole, whose habits are much the same both in Europe and in North America, there are others that are not all just alike in every particular, although they all burrow in the ground to a greater or less degree. In Africa there is a golden mole with a beautiful coat of shimmering golden-green and purple, and in North America there is the star-nosed mole, who is distinguished from all his relatives by an extraordinary star-shaped ring around the tip of his little pink nose. The star-nosed mole is also peculiar for his webbed hind feet. This, of course, means that the little animal can swim, and we are not surprised to find that he prefers to make his tunnel in swampy land or on the banks of ponds and little brooks, instead of in dry meadows.

The mole's nearest relatives are the shrews

or shrewmice as they are often called. There are a great many of these queer little creatures in almost all countries of the world, in the woods and meadows, under the hedgerows, up in the trees, on the banks of the streams, and even swimming merrily in the water. Yet very few people know anything about them, because shrewmice are the shyest as well as the smallest of wild four-footed beasts, and seldom show themselves boldly in the full light of day. One of them, called the mole shrew,

Here is a jumping shrew. It is sometimes called an "elephant shrew" because of its long snout. This little ground animal has long hind legs by means of which it can jump along quite rapidly.

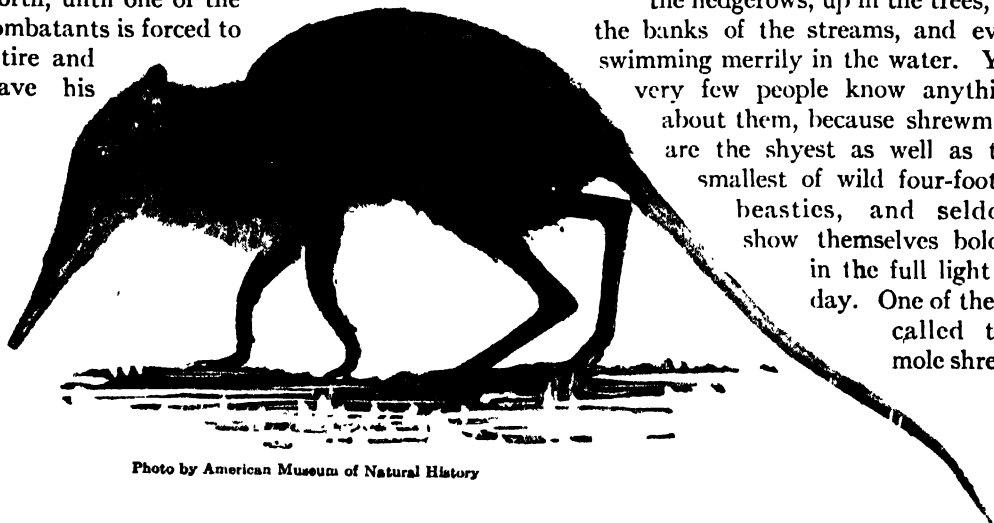


Photo by American Museum of Natural History

MAMMALS THAT LIVE ON INSECTS



Photo by James's Press Agency

This was once a level pasture, but a colony of moles decided that it would make a good hunting ground—and you see what a bumpy place it has become! If

you were to step on one of those miniature mountains you would find that it yielded beneath your weight, for a mole's tunnels are very near the surface.

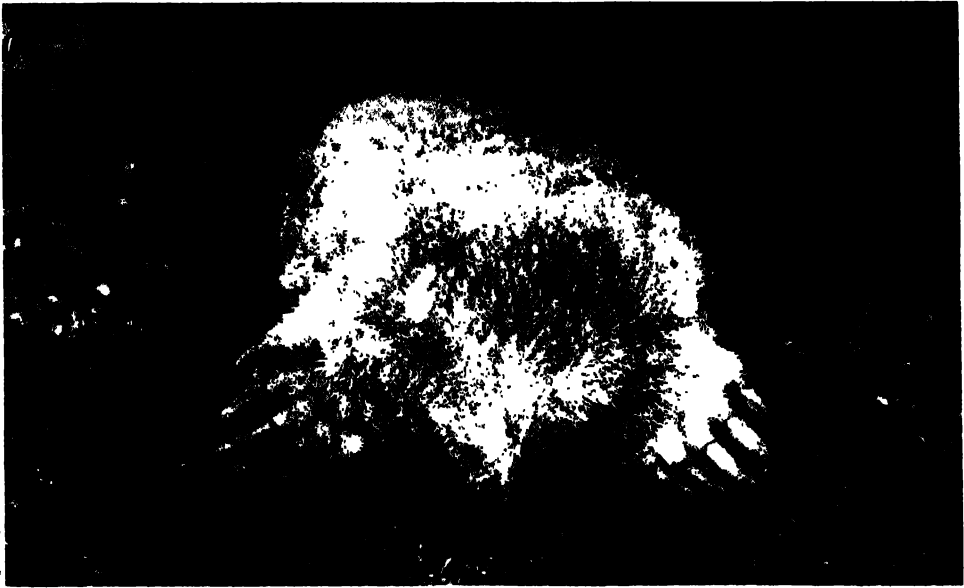


Photo by Cornelia Clarke

Here is the cause of all those bumps, the mole himself. You would never think that his broad grubby body was built for speed; but with those great claws of his he can dig himself out of sight in ten seconds, and in

three minutes he can make a tunnel a foot long. Since he has been known to dig up as much as 104 feet of ground in a day, you can imagine the amount of damage he can do to a front lawn or a golfing green.

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Photo by American Museum of Natural History

Here are two strange relatives of the shrew in their rocky home. Solenodons, as they are called, are about

the size of a small rabbit, and feed on grubs and insects with, perhaps, an occasional fruit for variety.

is often mistaken for the little gentleman in velvet, for its roly-poly body, covered with short dark fur, is of much the same shape as a mole's, and it has the same molelike habit of burrowing in the ground. But the molé shrew spends more time out of doors than the true mole does, and its forepaws are not broad and hand-shaped, but are more like the feet of a mouse.

The mole shrew is one of the short-tailed shrews; it has only a little stumpy tail. But its cousins, the long-tailed shrews, have fine long tails and look more like tiny mice. They have beautifully soft fur coats of the finest velvet, bright beady eyes, sharp reddish teeth, and long, pointed snouts which they are always wriggling and poking into everything.

How a Shrewmouse Gets His Dinner

Shrewmice are very restless little beings. They will spin round and skip about on their tiny feet, and then suddenly stop short, rearing up on their hind legs and snuffing the air

with quivering noses. They root around in fallen leaves and in the soft mould at the bottoms of hollow trees, and poke their inquisitive noses into every crevice in the bark. Their appetites are quite as large as the moles', so the little things are always excitedly hunting for something to eat. They tug worms from their burrows and gobble them up with the greatest relish. They pounce on crickets and beetles and crush them with their sharp little teeth. Even small birds, frogs, and lizards fall victims to these ravenous little creatures, who will actually kill and eat each other without the slightest compunction!

A Fight of Heads against Tails

Shrewmice are the most quarrelsome of tiny beasties. They are always ready to fight their own relatives, or any other small creatures that happen to annoy them. It is a funny sight to see two of these absurd little warlike animals fighting together. They advance to the fray squeaking and squirming

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with fury; spring and bound in the air, waltzing round and round each other; and then jump right over each other's backs. Their great idea seems to be to catch each other by the tail, and sometimes they both succeed in doing this at the same time. Then the fun begins. Each grip-



The charming little fellow at the left is all done up in a coat of stiff bristles, for the hedgehog, like the caterpillar, has the habit of rolling himself into a tight little ball when he is in danger. Then he will peek out from under his bristles to see if the coast is clear so that he may scuttle away or perhaps attack his enemy when it is off guard. Below, you see him standing on his four stumpy legs.

ping the tail of the other in its teeth; the two tiny champions spin madly round and round—head to tail and tail to head. Faster and faster they go in a whirling furry ball, until they fall apart and lie on their backs, squeaking with rage, their tiny feet kicking in the air. But this is not the end of the fight. It is only

the end of the first round. As soon as the mad little creatures have recovered their breath they are up and at it again. And so the battle continues, until one of the combatants is knocked out, or they are both so exhausted and giddy that they can fight no more.

Most of the shrewmice live in holes in the ground, or squeeze themselves under logs and woodpiles. The water shrews always make their home in the banks of a stream. They are most playful little rascals, not so quarrelsome as the common shrews, and in the evening they often have jolly games together. They chase each other over the

banks and through the water, scamper up and down the tall stems of the reeds, and tumble head over heels into the water with excited squeals. They swim and dive beautifully, and poke about with their long snouts among the stones at the edge of the stream in search of shrimps and small shellfish, which they crunch up with much enjoyment. They catch tiny fishes too, and carry them ashore before eating them, and they greedily gobble up the tadpoles and water insects that swim about in the stream.

The water shrew is bigger than the common long-tailed shrew. His velvety coat is nearly black and his throat and waistcoat snowy white, while his long tail and his toes are



fringed with stiff white hairs which help him to swim if he

decides to take a turn in the water.

The pigmy shrewmouse that lives in Egypt is the smallest of all these quaint little animals. It is hardly more than an inch long—without counting its wee wispy tail. The tree shrews are quite big in comparison, for they measure six or seven inches and have bushy tails of almost the same length. Tree shrews are natives of India and of the East Indian islands. They look very much like squirrels as they scamper about in the trees, or sit up on their hind legs to nibble the nuts which they hold in their forepaws just as squirrels do.

Photos by N. Y. Zoological Society, and American Museum of Natural History.

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Oddest of all are the African jumping shrews that skip about on their long hind legs like tiny kangaroos. They are very curious little animals with ridiculously long pointed noses, which they twist and bend about like an elephant's trunk. For this reason the little creatures are often called elephant shrews.

Last among the insect-feeding animals we may mention the hedgehog, a decidedly prickly gentleman of the Old World who may be seen on a warm summer evening pottering about in the woods and country lanes in most parts of Europe. He is a queer little creature, rather like a bristly clothes brush, with a pointed, piglike snout at one end and a stumpy tail at the other. His legs are so short and so well hidden under his bushy coat that we can hardly see them as he waddles along in his peculiar zigzag fashion, planting his four feet flat upon the ground at every step.

The hedgehog takes life very easily. He never appears to hurry. He plods slowly along, making a funny little snapping noise as he pokes about in the ground looking for something for supper. He is not very finical about his food, although he appears to like best anything that he can crunch with his strong back teeth. He will eat worms, beetles, grubs and snails, and lizards and meadow mice if he can catch them. He will suck the eggs of birds that build their nests on the ground, or if nothing else is handy he will grub up roots from the ground or munch any berries or fruits he can find. His five toes are armed with sharp, curved claws which he finds very useful in digging up worms or scraping out a hole to live in.

The hedgehog has little to fear from other wild creatures when he takes his evening

stroll; for the moment anything alarms him he tucks in his nose and his feet and his tail, and rolls himself up into a prickly ball that few creatures are rash enough to tackle—or if they do they will not try it a second time!

In the early summer evenings the hedgehog usually takes his walking exercise alone, as his wife is occupied at home, looking after her babies. But later in the year one may see the whole family—father, mother, and four or five little hedgehogs—all out for a walk together.

Baby hedgehogs are born blind and helpless, and at first their spines are quite soft. The mother takes care of them in a cozy nest made of grass and moss, and thickly thatched with leaves to keep out the rain. The youngsters do not leave their parents as soon as they can look after themselves, in the fashion of most wild things. They stay at home till the end of the year, and sometimes the whole family pass the winter together. The father and mother, too, are like a real, old-fashioned, home-loving couple. They live peacefully together most of their lives, and do not keep changing partners, as most wild creatures do.

In the winter time no hedgehogs are seen about. They are fast asleep in holes along the banks or under hedges, all rolled into tight prickly balls and covered up with thick blankets of leaves and moss to keep them warm. No warm-blooded animal sleeps more soundly than a hedgehog at this time of the year. He almost stops breathing, and you would think he must be dead. But when spring comes round again, the little sleeper awakes, and comes rolling out of doors again—a most untidy-looking object, with a mass of dead leaves and wisps of grass clinging to his spines.

These little water shrews hardly deserve their uncomplimentary name, for they are very merry, playful little fellows.



MAMMALS

Reading Unit No. 5

THE MIGHTY CATS OF THE JUNGLE

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

Characteristics of carnivores, 4-285-86
Why the cat family is feared by its victims, 4-285-88
Why some lions become man-eaters, 4-290

The habits of the tiger, 4-290-91
The leopards—most dangerous of the cat tribe, 4-291-92
Jaguars and cougars, 4-292-94
Lynxes, 4-295
Indian cheetahs and civets, 4-296

Things to Think About

Why must jungle animals be constantly on the alert?
How are members of the cat tribe fitted to be beasts of prey?
Why do lions roar when they are

hungry?
Why are leopards more dangerous than lions?
Why is the mongoose often made a pet of in India?

Picture Hunt

In what way does this lion resemble a house cat? 4-285
How are Indian lions different from their African brothers? 4-287
Why are tigers good hunters? 4-289

How can you recognize a leopard? 4-292
How can you recognize a jaguar? 4-293
What member of the cat family is hunted in Canada for its fur? 4-295

Related Material

How does a mongoose kill a cobra? 3-486, 487

What ferocious carnivore existed in prehistoric times? 3-52, 54

Leisure-time Activities

PROJECT NO. 1: Study your house cat and learn why it is a carnivore, 4-285-86

PROJECT NO. 2: Visit the lion house in the zoo at feeding time.

Summary Statement

Carnivores are beasts of prey. They have sheathed claws in padded feet, sharp teeth, savage tem-

pers, and great strength. They stalk their prey.

THE MIGHTY CATS OF THE JUNGLES



Photos by N. Y. Zoological Society, American Museum of Natural History, and L. Ollivier

THE MIGHTY CATS OF THE JUNGLES

Everybody who has been to the circus or zoo has stopped to admire the majestic lion, and many of us have been lucky enough to hear him roar. Few, however, have heard a roaring contest in the wilds of Africa, when several lions meet at the same watering place. One starts the chorus and all the rest join in, each one trying to outroar the next. The din is appalling.



Photo by N. Y. Zoological Society

The MIGHTY CATS of the JUNGLES

Lions, Tigers, Leopards, and Their Kin, Terrors All to Man and Beast

YOUNG animals have their lessons to learn, just as human children have. One of their first lessons—one might call it the ABC of their education—is to keep a sharp lookout for hidden danger. No matter what they are doing, whether feeding or playing or just running about out of doors, all young cubs are taught to keep their ears pricked up and their eyes wide open for any unusual sight or sound.

Of course that heavy shadow *may* be only a shadow, that faint rustling *may* be only the wind in the grass or the leaves. But one never knows. The shadow may prove to be some fierce, cunning creature all ready to pounce on unwary little animals; and the soft rustling may be the stealthy footfalls of a prowling beast of prey. If the animal children forget their lesson and grow careless about keeping watch, they have a very poor chance of ever growing up.

All over the world, in forest and jungle, on hill and plain, savage beasts of prey are forever on the watch to kill and devour their

weaker neighbors. Strong, fierce creatures they are, showing no mercy to their helpless victims. Of course we cannot blame them. True beasts of prey kill for food, and are better than man in that they never kill for sport or wanton mischief. They cannot live on fruits and nuts and green growing things, as many wild animals do, and since they *must* eat if they are to live, there is every excuse for their savage behavior.

These fierce hunters of the wild are called carnivores (kār'nī-vōr), or "flesh-eating" animals. They are fearsome beasts, armed with sharp, curved claws to seize and rend their prey, great fangs for piercing and tearing their food, and strong back teeth for chewing and chopping and for crunching bones.

Foremost among the beasts of prey come the lion, the tiger, and the leopard—and all the other hunters, great and small, belonging to the cat tribe. They are strong, wiry animals with long bodies and strong but slender legs. All cats walk on their toes—and since

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under each toe is a soft, elastic cushion, the creature pads along, with footsteps so noiseless that its victims seldom know it is near until too late.

A Cat's Best Weapon

These soft velvet paws are armed with a terrible array of concealed weapons in the shape of long, sharply-pointed claws, which can be thrust out in a twinkling when the cat makes its sudden deadly spring. When the beast is only prowling, its claws are drawn right back under protecting sheaths of tough skin—which you may see in any pussy's paw. So the claws make no noise to warn the hunted quarry, and do not get worn and broken on hard, rough ground.

Wild cats keep their claws sharp and ready for use by clawing the rough bark of forest trees, while tame pussy cats—as you must have noticed—mostly keep theirs in good order by clawing the furniture, often choosing a particular leg of the kitchen table as their own especial claw sharpener. You see, our pet cats, although they have been tamed and have lived sheltered—not to say pampered—lives with us for hundreds and hundreds of years, still keep some of the old savage instincts of their wild ancestors. No matter how cozy a bed is provided for their comfort, cats much prefer to prowl around out of doors at night; and however well they are fed, Master Tom or Mistress Puss simply cannot help hunting birds and mice. They will stalk their prey in just the same stealthy way as

stalks larger game in the Indian jungles.

All cats, wild or tame, prefer night to day for their hunting expeditions. As they slink through the darkness their eyes gleam like balls of green fire. The pupils are then wide open to admit every ray of light there is. In the daytime the pupils of a cat's eyes contract to narrow slits or pin points; but through them the cunning animal can see perfectly, for unlike bats and many of the other night-prowling creatures, cats are not bewildered and dazzled by the light of day. Tame pussy cats, and some of their smaller wild relatives, have narrow, slitlike eyes in the daytime; but the pupils of the eyes of the big hunting cats—such as the lion, the tiger, and the leopard—are always round, even when they are contracted.

The Keen Scent of a Cat

Besides their marvelous eyes cats have very sharp ears and remarkably keen noses. They can smell an enemy, or an animal that would make a nice supper, while it is still far away. Their long stiff whiskers, too, are not merely ornamental. They act as feelers, and help the cats to find their way about through the darkest, thickest jungles.

All cats, from the great lions and tigers down to the friendly pussy cats who condescend to share our homes with us, have the same kind of teeth. The front teeth are like two rows of sharp chisels; then on each side a long, curved tooth projects like a fang, while the back grinders are covered with sharp points. Besides this terrible array of cutlery for cutting and tearing their food, all cats,

These three baby lions have a hard nut to crack. Luckily for the giant turtle with which they are playing, he has a good stout shell—for lion cubs have sharp claws, and the turtle certainly couldn't run fast enough to get away from his little tormentors!

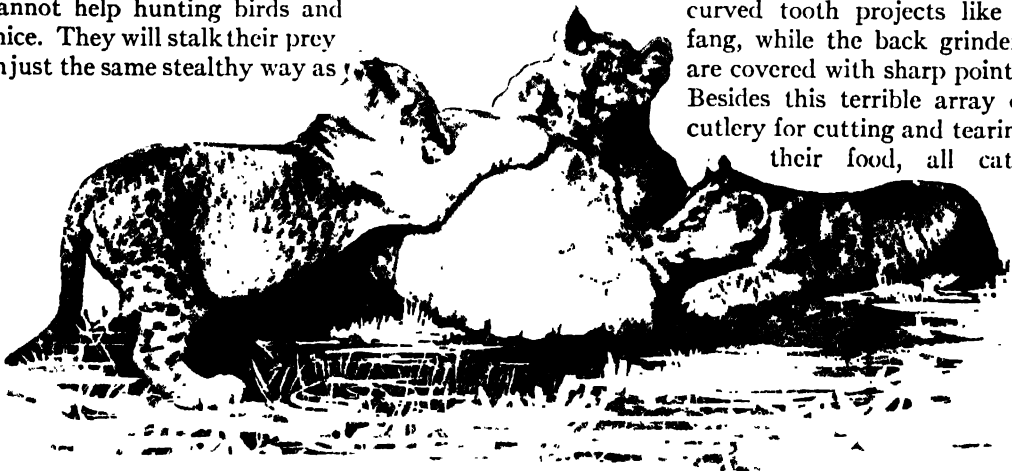


Photo by Presse-Photo, Berlin

THE MIGHTY CATS OF THE JUNGLES

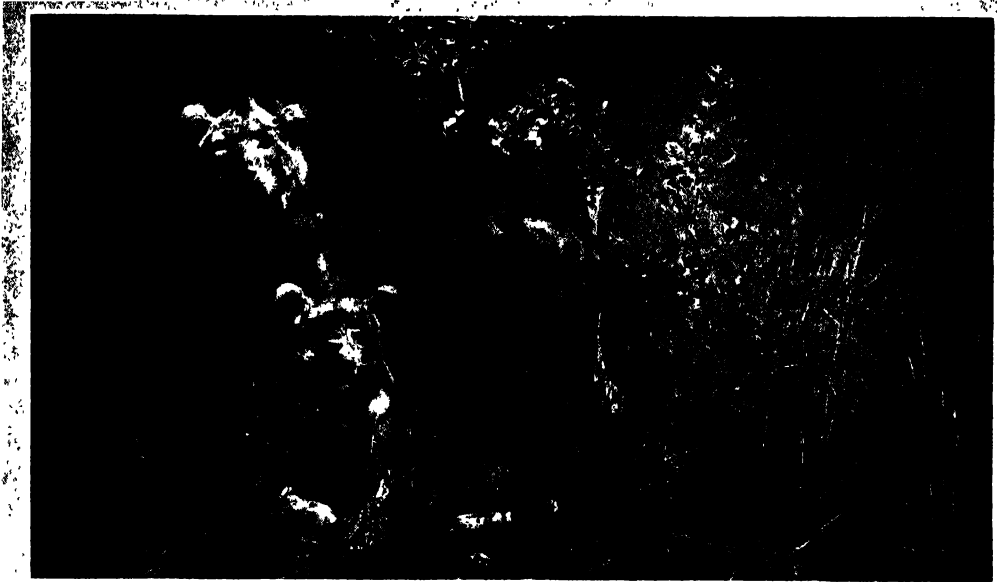


Photo by American Museum of Natural History

These are the folk you may meet when you go to walk in a jungle in India. Lions were never so common as tigers there, and to-day there are very few of them

left. They are smaller than their African cousins, and the male is likely to have much less of a mane. Above are an Indian lion and lioness out hunting.

great and small, have a very rough, horny tongue with which they rasp and scrape the last scrap of meat from a bone.

Chief of this tribe is the mighty lion, the "King of Beasts," as he is called—though some travelers who have met the lion at home in his native haunts say he is not nearly so bold and fearless as he is generally supposed to be, and that the great Indian tiger, which rivals the lion in size and strength, should really have the royal title. This hardly seems fair to the lion. He is certainly lazy and will not trouble to go out of his way to attack man or beast unless he is hungry or irritated, but this is surely a good trait in his character. When roused to wrath the lion's rage is very terrible, and many true stories told of his courage prove that His Majesty is no coward. At any rate he is the king of beasts in Africa, for there he has no tigers to dispute his rights.

A Queer Place for a Claw

In appearance, at least, the lion is certainly the most imposing of animals. He is distinguished from all other cats by the fine shaggy mane which adorns his head and

shoulders and gives him a truly majestic air. He has, too, a peculiar claw hidden under a long tassel of black hair at the tip of his tail. No one seems to know exactly the use of this strange contrivance. People used to think the lion lashed himself into a fury with it, but the claw is far too small to make any impression on the animal's thick loose hide.

The Lair of a Lion

The lioness, although she is almost as big and every bit as savage as her mate, looks a good deal smaller, for she does not possess a royal mane. Neither has she the funny little claw at the end of her tail.

You seldom meet a lion prowling round in damp, dark forests. He prefers dry, open country, as a rule, but one with plenty of cover to hide in during the hot hours of the day. It is nearly impossible to see the great beast when he is quietly resting. His tawny coat is so much the color of the patches of tall dried grass among which he crouches, or of the sun-baked earth on which he sometimes makes his lair, that it is quite easy to overlook him entirely. So travelers in the

THE MIGHTY CATS OF THE JUNGLES

wilds of Africa need to ride cautiously and look well where they are going if they do not want to rouse a sleeping lion and have an unpleasant surprise!

Unless hunger makes him restless, the lion naps most of the day, though he usually sleeps with one eye at least half open, and so is seldom caught unawares. After the sun has set, His Majesty rises, stretches himself like a cat, opens his great mouth in a lazy yawn, and then, shaking back his shaggy mane, starts off to find something for supper.

Before he begins hunting he usually trots down to the nearest pool or running stream to get a good drink of water. Then he raises his great head, looks all round, and sniffs the breeze to see if there is anything good to eat near at hand. If there is nothing promising in any direction, he may hide under a clump of bushes and watch for the antelopes, zebras, or other thirsty animals that are sure to come down to drink in the cool of the evening. Or he may prowls about in the underbrush and thickets, stealing furtively along in the shadows and sniffing the air—just like the great cat that he is!

If the hunting is poor and the lion can find nothing to satisfy his hunger, he grows impatient, and, putting his nose to the ground, gives a loud, rumbling roar! This awful sound so terrifies any small, timid animals that may be hiding in the scrub that they dart from their shelter and dash wildly about in a panic. Then with a mighty bound, the cunning lion springs on one of

the frightened things and strikes it down with a terrific blow of his paw.

If his kill is not too big His Majesty picks it up in his jaws and takes it off in triumph to his lair, where he may enjoy his supper at his leisure. But if it is too heavy to be carried home that way, he will drag his prize along the ground; or if even that is more than he can manage, he will set to work and cut out as much of it as he can on the spot. But the lion does not always capture his prey quite so easily. If he attacks some big, strong animal, such as a bull buffalo, he may have to fight for his supper, although he usually overcomes the beast, however strong and bold it may be.

Lions do not go about in herds, as many timid animals

do. They are strong enough and bold enough to be independent. So the lion hunts and fights alone, unless he is accompanied by his-mate. When the royal pair have three or four big cubs to be proud of, the whole family party, father, mother, and the youngsters, often go hunting together.

While the cubs are too small to go out into the world the lioness stays at home in her den or her lair to look after them and protect them from other beasts of prey who would as soon eat a soft fluffy lion cub as any other small creature. The father lion then goes hunting alone and brings home food for his mate and his cubs. The cubs are

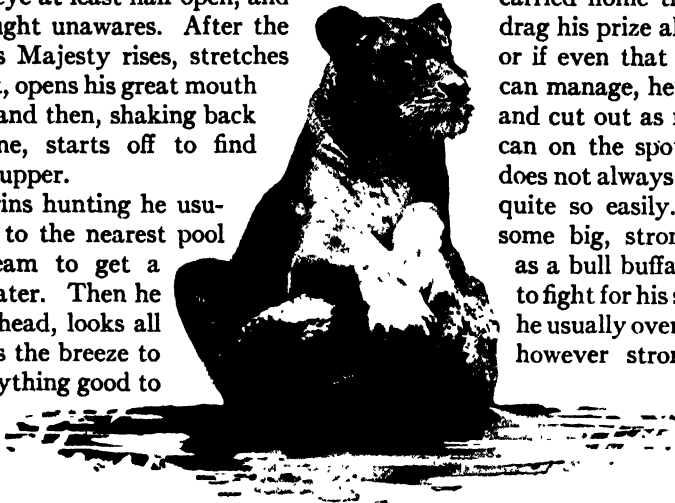


Photo by N. Y. Zoological Society

The lioness usually goes out hunting with her mate, but when she has babies to take care of she stays at home to guard them, and she can be even more ferocious than the lion if anything dares to attack her then.

Below is an Abyssinian lion in a pose much admired by artists and sculptors, who have often made use of the kingly beast to represent noble strength and steadfastness.

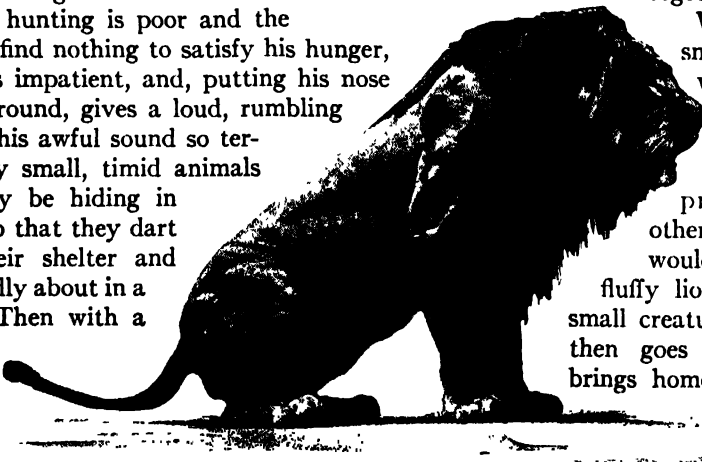


Photo by N. Y. Zoological Society

THE MIGHTY CATS OF THE JUNGLES



Photo by American Museum of Natural History

Now must all the weaker beasts of the Indian jungle beware, for the fearsome tiger and his mate are hunting. Not a sound do these creatures make, scarcely a

twig crackles beneath their soft padded paws, but with terrible grace they slink through the bushes ready to crouch and spring with fatal aim upon their prey.

fierce, greedy little rascals and they squabble and snarl over their dinner in a very ill-mannered fashion. The father lion, however, watches them with dignified pride, while the lioness takes no notice of their rude behavior unless they get in her way. Then she gives them a smart cuff or two with her paw and continues to bolt her share of the feast in huge mouthfuls.

Lion cubs are not born blind, as most cats are; their eyes are wide open from the very first. They have spotted coats, too, instead of being of a single color, like their parents, and do not lose their spots until they are almost grown up.

Advice on Meeting a Lion

In the daytime a lion that has enjoyed a good supper the night before is seldom dangerous unless he is annoyed. So if you should ever travel through the wilds of Africa, re-

member this piece of advice. Should you happen to meet a lion taking a morning walk, just take no notice of him, but go quietly and steadily on your way. The chances are that the lion will follow your example and go on *his* way without doing you any harm. But if you grow excited, begin to run and shout, wave sticks or fire off guns, the lion will be almost certain to lose his temper and spring at you in a rage.

As a party of travelers in South Africa were once riding down a woodland glade, the leader was suddenly startled to see a lion as big as a small bullock loping along in front of him. He was just going to aim at the beast when one of his companions cried out, "Look! look!" To his dismay six or seven more lions bounded from the bushes by the side of the glade and galloped ahead like a lot of huge dogs. Fortunately the travelers had the sense to go quietly on, and

THE MIGHTY CATS OF THE JUNGLES

did not attempt to shoot the lions, who took no notice of them but trotted calmly off, intent on their own affairs. This must have been a family party of lions who for some reason were out for the day together.

Why Lions Turn "Man-Eaters"

Although, as a rule, a lion will not go out of his way to attack a man, old lions, who have become too feeble to hunt strong, fleet-footed game, will sometimes turn "man-eaters." They will hide near a native village and spring out upon any luckless man, woman, or child who happens to pass that way in the evening. Then there is nothing to do but to kill the brute. But so cunning are these man-eaters that a great many people are often caught and devoured before the old rascals are tracked down and dispatched by the hunters of the village with guns or spears.

If the African lion is king in his native land, in India the terrible tiger is certainly lord of the jungle. For although at one time, and that not very long ago, there were plenty of lions in India to dispute his authority, they have been hunted so ruthlessly that now it is quite rare to meet a lion roaming in the wilds. So my lord the tiger has things pretty much his own way. He is the tyrant of the jungle, feared and hated by all other wild creatures living within the bounds of his territory.

He is a remarkably handsome beast, in his sleek furry coat of golden brown, chocolate, and white. And he is wonderfully graceful and active. A full-grown tiger more than nine feet long and weighing over four hundred pounds can move as lightly on his huge padded paws as the smallest cat, and can leap fifteen feet in a single bound.

But you have only to look at his face to

see what a savage fellow the tiger is. His sly, cruel expression, his wicked-looking eyes which change from yellow to green, from green to black as he glares at you; the great yellow fangs in his snarling mouth, are enough to scare the bravest man among us. No wonder he makes all timid jungle folk tremble.

Like the lion, the tiger passes the day resting in his lair, choosing, as a rule, a patch of long grass where he is hidden from prying eyes and can stretch himself out full-length while he dozes at his ease.

About five o'clock in the afternoon my lord rises from his bed, yawns, licks his paws and his sides like a cat, and starts off on his nightly round.

Nothing comes amiss to the tiger in the way of food—so long as it is animal food. He hunts deer, antelopes, and wild pigs, kills and eats monkeys and peacocks and even prickly porcupines, and if he happens to find a dead animal

lying in his path he will stop and make a meal of that too.

Nothing is too small, nothing is too big for a tiger to tackle.

He will steal into villages after dark and carry off sheep and calves, or he will boldly attack buffaloes, wild bulls, and young elephants. If his kill is not too big he will devour it then and there; but, as is sometimes the case, if the victim is almost as big as himself, the tiger, after eating as much as he possibly can, will retire to his lair to rest and digest his food, and will come back for a second helping when he is hungry again. Or the wily beast may lie down near, under cover, where he can keep an eye on his meat and drive away the jackals and other thieving animals if they attempt to steal it.



Photo by N. Y. Zoological Society.

Here is a snarling tiger from Bengal, where tigers are numerous and greatly feared by both herd and herdsman. Like the lion, the tiger has a terrifying roar, but he does not use it much.

THE MIGHTY CATS OF THE JUNGLES



Photo by American Museum of Natural History

Leopards are really the most dangerous of the cat family, for they have all the strength of lions and tigers and even more ferocity, combined with a greater

cunning. They will kill just for the pleasure of killing, and attack with no provocation at all. The two leopards above come from India.

The tiger is found nowhere except in Asia. He lives in the grassy jungles and hot swampy forest regions of India, China, and Burma; and, strange to say, is quite at home in the cold climate of Manchuria and Siberia.

The northern tiger in the winter time wears a very long, thick, woolly coat. His fur, too, is thicker and lighter in color, and not so distinctly striped as it is in the summer. So as the tiger prowls about over the snow, seeking whom he may devour, his thick fur keeps him warm, while its lighter color enables him to stalk his prey without being seen too quickly.

After the lion and the tiger, the leopard is the most dreaded cat of the Old World. Indeed some travelers say they would rather meet a lion or a

tiger than a leopard any day. For although it is a much smaller animal, it is so fierce and reckless that it will hurl itself like a mad thing at everything and everybody, regardless of the consequences. It attacks animals much larger and stronger than itself and fights like a demon with its teeth and with the claws on its forefeet and hind feet, all at the same time—a perfect whirlwind of fury. And even when mortally wounded, it refuses to be shaken off by its enemy.

The leopard can spring and leap and climb trees quite as well as a smaller cat; and one of its favorite tricks is to lie full-length on a stout projecting bough and fling itself down on some unhappy animal that passes by. It preys on wild pigs, antelopes, monkeys,



Photo by N. Y. Zoological Society

Not a pleasant fellow, this snow leopard, whose light-colored coat with its blur of spots is well adapted to his snowy mountain home.

THE MIGHTY CATS OF THE JUNGLES

and young baboons that lag behind the rest of their party; but bold as it is, the leopard appears to know that a full-grown baboon is likely to be a match for it. Another of its cunning tricks is to crouch in the grass or the reeds growing by the side of a stream and spring out on the animals as they come down to drink in the evening.

The Bad-tempered Leopard

Leopards live both in Africa and Asia, and bear an equally bad character on both continents. For they raid the sheepfolds and cattle pens and even carry off dogs from the villages. But they are wonderfully graceful animals, with beautifully silky coats, which are always marked with large black spots in the shape of rosettes. The fur surrounding the spots is usually a reddish yellow, though there are some small African leopards with white coats—of course spotted with black. Occasionally both in Africa and India perfectly black leopards—or black panthers, as they are often called—make their appearance, but even then their spots, like the pattern on damask or watered silk, may still be plainly seen.

There is a clouded leopard, too, in Southern Asia, with rosettes less distinctly marked; and on the mountain ranges of Central Asia lives an amazingly beautiful animal called the snow leopard, or the ounce. Its thick woolly coat is snowy white shaded with silver-gray and marked with the dark spots which belong to all the leopard family.

The ounce is not quite so fierce as other leopards, though it is a determined hunter. It wanders about on the mountains and pounces on wild sheep and goats and any other small creatures that live so high up in the world. But it has never been known to attack a man.

The cougar (kōō'-gār) and the jaguar

(jäg'wār), sometimes known as the lion and tiger of the New World, are the largest hunting cats in America. The jaguar is the larger and more savage animal of the two. Although he does not often attack travelers if he is left alone, he is a most dangerous beast to interfere with, and the native herdsmen of South America say that the presence of a man annoys him!

The jaguar does not often wander so far north as the southern states of North America, although he is occasionally to be met in the wilds of Texas, lower Louisiana, and New Mexico. His headquarters are the great forests running through Central America to Brazil. There the fierce jaguar is monarch of all he surveys, as there are few animals in these forests strong enough to defy him. He is really a splendid creature, more like a leopard than a tiger, for his glossy golden-yellow coat is marked with spots and rings of jet black. He has two or three black stripes across his breast as well. Though not so huge as the Indian tiger the jaguar is more sturdily built; his legs are

shorter and stouter, and his paws are enormous. In spite of his size and his weight he moves lightly and noiselessly over the ground in true cat fashion, swaying—as he walks

with a snakelike motion and swinging his tail from side to side. He climbs trees as easily as a

small wild cat, and where the undergrowth of the tropical forests makes it impossible to walk on the ground, the jaguar chases monkeys through the tangle of leaves and branches overhead without losing his footing or getting tangled himself.

The jaguar is very fond of monkeys and eats all he can manage to

This leopard comes from Abyssinia, a land south of Egypt. Notice his strong lithe body and sturdy legs, which enable him to carry his kill as much as twenty feet above the ground, though it often may weigh quite as much as he does.



Photo by Zoological Gardens, Berlin

THE MIGHTY CATS OF THE JUNGLES



Photo by N. Y. Zoological Society

Here is the lordly jaguar, largest of the cats of the New World. He is spotted like the leopard, but the

spots are larger and more like rosettes, for inside each dark ring are several small black dots.

catch. He kills and devours almost any forest creature he comes across in his rambles—monkey, peccary, agouti, tapir, he doesn't mind what it is. He hides by the drinking pools and springs upon the river hogs and deer when they stoop to drink. He wanders by the side of the river and digs turtles' eggs from the sand banks with his claws—or lies out on a jutting rock or an overhanging bough and scoops fish out of the water with his paws. Even such tiny things as lizards and insects do not escape him. He just snaps up every moving thing he spies. He can swim, too—a very unusual accomplishment for a cat—and he sometimes climbs on board a boat anchored in the river to see if there is anything good to eat there. Then, by way of a change, the jaguar will steal out of the forest and kill cattle, horses, and sheep. Altogether he does so much mischief that he is thoroughly disliked both by wild, four-footed forest folk and the two-legged human folk who live on the borders of his hunting ground.

The Bold Cougar

The cougar is neither so big nor so ruthless in its ways as the terrible jaguar. But it is big enough and bold enough to command

respect wherever it may happen to be, and should these two fearsome cats happen to meet there is sure to be a furious fight between the American "lion" and "tiger."

An Animal with Many Names

The cougar has many names. It is called the puma, painter, panther, and the mountain lion, in different parts of America. It looks far more like a lioness than a lion, for it has no mane, but it is really a splendid animal in its shaded, cinnamon-colored coat and snowy white waistcoat. In bygone days it roamed freely in almost every wooded district of the United States; but it was so relentlessly hunted by settlers that now there are only a few left in the wilder parts of Northwest America. In South America, however, it is still a fairly common animal on the plains and in the forest regions.

Like all cats the cougar prefers to hunt at night, but occasionally it will come boldly forth in search of food in the full light of day. Stealthily it stalks its prey, creeping nearer and nearer, until, throwing caution to the winds, it gives two or three astonishing leaps and lands on the back of its quarry. People who have watched a cougar in its native haunts say it can cover from twenty

THE MIGHTY CATS OF THE JUNGLES

to forty feet in a single bound, and spring upward to a bough twenty feet above its head. They say, too, that these great cats are exceedingly frolicsome. Even a full-grown cougar will sometimes gambol and bound about when it thinks it is alone, where no one can see its ridiculous behavior; and cougar cubs are as playful as kittens. The little things will amuse themselves for hours together, having sham fights, playing hide-and-seek, and springing high into the air to catch butterflies with their paws.

The cubs have spotted coats—just as young lions have until they have grown out of their childish ways. With their innocent-looking little faces and kittenish ways they are about the prettiest babies in the animal world.

Full-grown cougars hunt deer and all kinds of wild animals, and worry the farmers by killing a great many of their pigs, calves, sheep, and goats. When they are very hungry they will even attack a horse or a cow, but they almost never attack a man. South American natives declare that the cougar is the friend of man and never does him any

harm. They say that it is quite safe to sleep out on the plains over which these animals roam, for the great creatures will not hurt even a child.

The cougar is the last of the big hunting cats, but there are a number of smaller cats in all parts of the world that are just as

savage in their ways as their more alarming relatives. They

are usually called tiger cats when they have striped coats, and leopard cats when their fur is spotted, while the common wild cat

of North America has been given the name of bobcat be-

cause it has a queer little short tail only a few inches long.

Most of these wild cats sleep by day curled up in hollow trees or in holes in the rocks, and prowl about at night, like

all their tribe, to seek their prey. They hunt mice and rats, rabbits, hares, or any small beastie that stays up too late. They climb trees and seize roosting birds or the fledglings in the nests, and often make the night hideous with their unearthly yells and caterwauls.

Some of these wild cats can hardly be called "small," although they are small in comparison with great beasts like the cougar and jaguar. The American tiger cat, or ocelot (*ō'sē-lōt*), for example, is a s

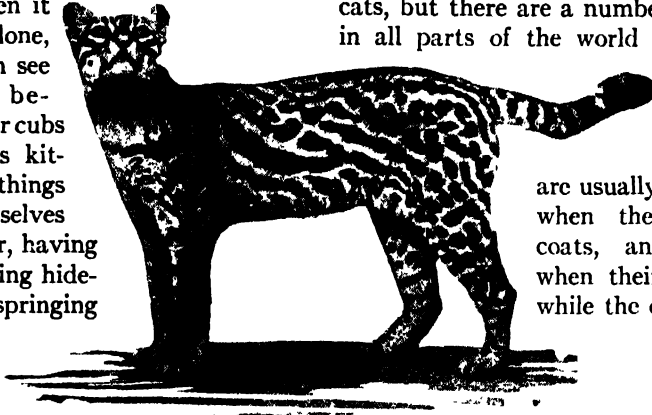


Photo by N. Y. Zoological Society

This pretty animal, which looks more like an ordinary pussy than do the rest of his savage cousins, is an ocelot. He gets his name from the eyes, or ocelli, which adorn his smoky, pearl-colored coat. He is smaller than the jaguar or the puma.



Another great American hunting cat is the puma, or mountain lion, which is found all the way from the Canadian border to Southern Patagonia.

Photo by Field Museum

THE MIGHTY CATS OF THE JUNGLES

Here are two lynxes from the forests of Canada, where they feed largely upon rabbits and wood grouse. Their fur, which is soft and thick and handsomely colored, has considerable value in the fur markets.



Photo by N. Y. Zoological Society

heavy as a big lynx. It makes its home in the South American forests, and in the forest regions of the Southern United States, and spends nearly all its time prowling about up in the trees hunting for birds and monkeys.

The Canadian lynx is almost as big as the ocelot. It is a queer-looking, long-legged cat, with an absurd little stumpy tail and a flat, savage-looking face. The fur on its cheeks is long and thick and stands out like bushy whiskers on each side of its face, making the animal look rather like a disagreeable old gentleman.

The lynx is as disagreeable as it looks. It is a most ferocious animal. It feeds on rabbits and hares when these are plentiful enough. When they are not, it will make war on all small beasts and birds that live in northern countries. It will climb trees after squirrels and birds in their nests; it will stalk grouse, slinking slyly up to them under cover of patches of grass or low bushes, and pouncing so swiftly and suddenly on its prey that the poor things have small chance of escaping its clutches. Best of all, the lynx loves to lie in ambush, patiently watching and waiting until some luckless

little creature draws near. Then with a leap and a bound it strikes its victim down.

So the lynx prowls over the snow on its broad, furry paws, which are as good as showshoes, and pounces with glittering eyes on any half-starved creature that has crept out into the cold to see if it can find a scrap of food to eat in those hard times. Or perhaps it may be lucky enough to pick up a dead bird lying on the frozen ground. How glad the wily lynx must be when winter is over and there is "good hunting" once more for hungry beasts of prey.

In all northern lands, in Europe, Asia, and North America, the lynx roams at large through the woods and forests and over rocky hillsides. Besides ground birds and small animals it will sometimes attack deer and cattle, and it is a terror to sheep and goats. To suit the cold climate of the northern lands the lynx has a very thick, heavy coat, which grows thicker and heavier still when winter comes. It is sometimes hunted for its fur, but the animal is not easy to catch, since not only can it speed over the ground with astounding leaps and bounds, but it will plunge boldly into a river and



Photo by N. Y. Zoological Society

This stately handsome creature is known as a wild cat, bobcat, or lynx rufus. It is a smaller variety of the Canadian lynx, and is found in the eastern part of North America.

THE MIGHTY CATS OF THE JUNGLES

swim to the other side to escape from its enemies.

When brought to bay, the lynx gives the most blood-curdling yells, while its big round eyes gleam with a pale, ghastly light. It is not very surprising that in olden times, before very much was known about wild animals, people were highly terrified by this extraordinary cat and firmly believed it could see right through a solid wall!

The Tropical Cousin of the Lynx

First cousin to the northern lynx is the caracal (kār'ā-kāl). This cat likes hot countries, so it makes its home in India, Persia, South Africa, and Egypt, and prefers open country to woods and forest land. It is a very strange-looking animal, with a longer tail than the other lynxes. It is smaller and slighter, too, and has a reddish-tan coat without spots or stripes, while a very long tuft of black hair stands up on the tip of each pointed ear like a tassel or a plume.

The caracal is wonderfully quick and active, and at one time was trained in India for hunting; but it is not nearly so fleet of foot as the cheetah, or hunting leopard of Asia. The cheetah is the swiftest of all the cat tribe. It skims over the ground like an arrow from a bow. In a race of six hundred yards or so no animal in the world could beat the cheetah, though it cannot keep up its terrific speed for any great length of time.

In its native woods the cheetah often makes its home in a hollow tree, coming forth when it is hungry to hunt the swift-footed deer, antelopes, and gazelles, which it overtakes with the greatest ease. It looks far more like a spotted dog than a cat, with its long legs, slender body, and small, rounded head. But the cheetah does belong to the cat tribe, though it cannot draw its claws back into their sheaths so completely as other cats can.

In India cheetahs are trained to hunt deer, and are often taken out on a leash for exercise by their keepers, just as dogs are. They are easily tamed and very intelligent, but, like all cats, they do not allow too many liberties to be taken with them.

With the cheetah we come to the end of

the cat tribe. But there are some odd little animals called civets (siv'ēt), the genets (jēn'ēt), and the mongooses that, although they are certainly not "cats," are more closely allied to them than to any other tribe in the animal world.

They are all Old World animals. The civets, sometimes called civet cats, are about as big as a fox but look more like huge weasels, with their long bodies, narrow heads, and short legs. Their coats, however, are always striped and spotted like the coats of true cats. They live in woods in Africa and India but are very seldom seen, for like most beasts of prey, they sleep in the daytime and do their hunting at night. But even though you may not actually see a civet, you can usually smell it if you are anywhere near its hiding place, since just under its tail it has two little pouches of very strong scent. At one time the little creature was hunted for the sake of its scent bags, for the strong-smelling stuff was much used for a perfume called "civet."

The Snaky-bodied Genet

The civets usually hunt on the ground, and are quick at catching rats and mice, frogs and lizards, and birds that nest on the ground. But their cousin the genet, although it too lives on the ground and hunts wee animals, is fond of climbing trees and taking birds from their nests. The genet is no bigger than a cat, and has such a snaky little body that it can squeeze into small holes and crevices after its four-footed prey.

The mongooses are really useful little creatures, for they wage incessant war on rats and mice and snakes and such vermin, and even help to keep down the crocodile population in Egypt and India by eating large quantities of crocodiles' eggs.

The Indian mongoose is often kept as a pet in his native country, and allowed to run about just as he pleases, for this little creature, which is only the size of a small cat, goes for every snake he sees and actually eats it too. He skips and jumps about so quickly that the reptile cannot bite him, and when finally he springs on the snake, the battle is won.

MAMMALS

Reading Unit No. 6

THE WILD COUSINS OF YOUR DOG

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

Why the wolf pack is feared by all other animals, 4-298, 299, 301

The coyote of the prairie, 4-301-2

The detested jackal, 4-302-3

How foxes live, 4-303-6

Wild dogs which even lions and tigers fear, 4-306-7

Where our dogs came from, 4-307

The cowardly hyenas, 4-308-9

Things to Think About

Why are wolves dangerous?

Why do jackals follow lions and tigers?

What food habits of foxes are useful to man?

What changes come over the

arctic fox in the winter?

How did the dog become man's pet?

What habits give the hyenas their bad reputation?

Picture Hunt

Why do not wolves have to rely on their speed for food? 4-300

Why are coyotes and wolves outlawed by man? 4-298

How do arctic wolves adjust themselves to snow and ice?

4-298

Why are jackals considered cowardly? 4-302

Why have foxes become very clever? 4-304

Leisure-time Activities

PROJECT NO. 1: Visit the wolves, foxes, and hyenas at the zoo. Watch them at feeding time especially.

PROJECT NO. 2: Visit the American Museum of Natural History in New York City, if you

can, and see the exhibits of hunting wolves as shown in the pictures on p. 4-300 and 4-301

If these two projects are impossible for you to carry out, read John Masefield's "Renard the Fox."

Summary Statement

Wolves are dangerous because they hunt in packs and never tire when tracking down their prey. The foxes of America and Europe are cunning and sly. They destroy chickens; but they devour many mice and woodchucks too.

The arctic fox gets a thick, white coat in winter to make him invisible in snow and ice. The relatives of our dogs include the wolf, coyote, jackal, fox, and hyena.

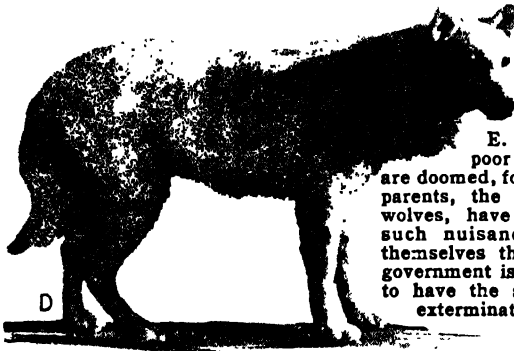
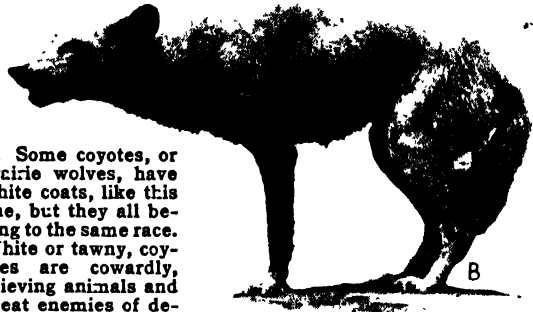
THE WILD COUSINS OF YOUR DOG

A. Here we have a pair of coyotes and their family.



B. Some coyotes, or prairie wolves, have white coats, like this one, but they all belong to the same race. White or tawny, coyotes are cowardly, thieving animals and great enemies of defenseless flocks of sheep. They seem to thrive near settlements, in spite of every effort to kill them off.

C. Not a police dog, but an American timber wolf.



E. These poor babies are doomed, for their parents, the timber wolves, have made such nuisances of themselves that the government is trying to have the species exterminated.



D. The wolf of the cold regions of the earth is often pure white to match its background of snow and ice. In general these animals are much larger and more powerful than their southern brothers, and their coats of fur are very woolly and thick, a protection against the cold and the driving winds.

F. Here is a coyote howling at the moon.



G. The common coyote looks very much like a fox, and he is just as keen.



THE WILD COUSINS OF YOUR DOG



When night has fallen the wolf leaves his lair and creeps stealthily through the snow, ready to attack any hapless beast who comes his way. Sometimes he

prowls silently and alone; sometimes he and his brothers of the pack fill the cold air with their howls, and then the villagers are glad to be safe at home.

The WILD COUSINS of YOUR DOG

Wolves, Coyotes, Jackals, Foxes, Hyenas; When You Think How Savage Most of These Are, You May Marvel at the Way Your Dog Loves All the Family

LIKE a stealthy gray shadow the grim figure of the wolf stalked through the nightmares of our forefathers. Many are the blood-curdling stories told of fearful encounters with him in bygone times, when he roamed the wastes and the woodlands and did pretty much as he pleased. Even to-day people who live on desolate tracts of country in cold northern lands may hear the long-drawn, melancholy howl of the wolves on winter nights—and thankful they must be that they are safe in their beds, and not fleeing over the frozen snow before the terrible hunting pack!

The fiendish howling of hungry wolves on the warpath can be heard for miles; and at that dread sound all wild animals flee for their lives. Even the great moose and the grizzly bear lose no time in hurrying off as fast as their legs can carry them; for well they know there is small hope of escape for any creature—no matter how big and strong

it may be—if it is overtaken by the murderous brutes. The moose will lay many of them low with his sweeping antlers before he is overcome, and the huge grizzly will strike right and left, dealing out deadly blows to the yelling, leaping demons that surround him on all sides, before he himself is pulled down. But the end is sure. None can withstand the onslaught of a whole pack of ravaging wolves. They win the unequal struggle by sheer force of numbers.

In North America such huge hunting packs no longer exist. Their murderous ways have been their undoing, for they have been driven out and exterminated by settlers in almost all parts of the country. In Russia and North Germany, however, packs of wolves still ravage the flocks and herds of the peasants, and when driven by hunger during a hard winter they will pursue and kill human beings if they have the chance.

THE WILD COUSINS OF YOUR DOG



Photo by American Museum of Natural History

The great timber wolves are relentless foes, for once they have got scent of their prey, no matter how swift

it may be they will track it down sooner or later by sheer endurance and iron tenacity.

The wolf belongs to the dog tribe, and looks like a monstrous, savage dog, although in his ways and his manners he is as unlike the well-bred pets who live with us as an animal well can be.

All the dog tribe have strong, well-knit bodies and long muzzles. They are swift runners but cannot spring and bound as lightly as cats can. They walk on the tips of their toes, but their claws are stout

This handsome animal is an American gray wolf.

and blunt and cannot be drawn back out of sight, so dogs fight with their teeth and do not strike with their paws. They are all more or less carnivorous (kär-niv'ô-rûs)—or "flesh-eating"—so they are included with the beasts of prey; and although

none of the tribe is so big or so strong as one of the great hunting cats, their habit of joining forces and hunting in packs makes them even more dangerous.

The common wolf is much the same in all parts of the Northern Hemisphere. Gaunt and gray, with small, furtive eyes that shine like fiery specks in the dark and a mouth set with hideous yellow fangs, he is the most unpopular member of the dog tribe wherever he shows his cruel face. Too cowardly to attack powerful animals when he is hunting alone, he spares no sick or defenseless creature he may find. He will leap into the midst of a

flock of sheep penned up in



Photo by N. Y. Zoological Society

THE WILD COUSINS OF YOUR DOG



Photo by American Museum of Natural History

The noble stag has little chance against a pack of wolves. He is fleet of foot but has none of their endurance, and sooner or later will tire and be forced

to stand at bay. Then the pack will all attack at once and, although he may fight bravely with his great antlers, his fate is sealed.

fold and kill the poor things one after another for sheer savagery. But in company with his fellows, who so bold as the wolf! With his pack he scours the country, hunting and killing all living things great and small that have the misfortune to fall in his way. With his curious, loping gallop, which he can keep up for hours, he will tire out and run down the swiftest runners of the animal world.

The Most Greedy Animal Alive

The wolf is the most ravenous and greedy of animals. He will devour anything from an insect to a buffalo. He does not even spare his own kind when he is hungry; if one falls sick or is wounded the rest of the pack at once set on their helpless companion and tear him to pieces.

At the end of the winter the hunting pack breaks up, and the wolves go off on their separate ways alone or with their mates, and hunt singly or in couples for the rest of the year. They go house hunting to find some sheltered place to live. A hole in the ground or in the rocks suits them nicely, while timber wolves usually scrape away the earth among

the roots of some great forest tree to make a comfortable, roomy den.

In the spring the young wolf cubs are born. The mother wolf keeps them carefully hidden away, and won't allow them to show their little noses outside the den until they are about a month old. By that time the young cubs are sturdy little things and cannot be kept indoors any longer. They play together like puppies round the mouth of the den, kicking and biting and bowling one another over, and they soon begin to snap up insects and frogs and chase every animal they see. The cubs stay with their parents until the end of the year, when they are almost full-grown. Then when cold weather sets in and the wolves begin to gather together for the hunting season, they join one of the packs and go out into the wide world.

The Wolf of the Prairie

The prairie wolf, or coyote (kī-ō'tè), as it is usually called, is not so terrible a creature as its gray cousin the timber wolf. It is smaller and not so dangerous to encounter. It has a wholesome fear of man with his gun

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and even when hunting in packs does not dare to attack him. But the coyote is a savage, greedy beast, just the same, and a terror to jack rabbits, the strange little prairie dogs, and all small wild folk that live on the wind-blown prairies of North America.

The Wails of the Coyote

Coyotes will eat anything they can catch and kill. In hard times, when hunting is bad and even field mice and gophers are scarce in the land, coyotes will keep themselves from starvation by eating wild rose hips and juniper berries, or will follow a party of roving Indians or a trapper and snatch up any scraps of food left round the camp fires. Like the gray wolves the coyotes hunt mostly at night.

Their mournful wails and howls have brought shudders to many a "dude" Eastern—who was quite sure the beasts were dangerous.

Coyotes dig dens for themselves. In the springtime half a dozen or more coyote cubs may often be seen frolicking about at the mouth of the burrow. The old ones do the hunting for their youngsters, and, if they can, they will drive their quarry right up to the den before killing it, to save themselves the trouble of carrying the food home, and also, perhaps, to give the cubs a lesson in hunting.

The coyote has a reddish coat grizzled with black and white hairs, but it grows grayer in the winter. Its fur is thicker and longer than the fur of the common wolf, and it has a more bushy tail.

The Indian wolf that hunts in the jungles is not so big as the timber wolf and has gray fur with a reddish-brown tinge. It does not form such large packs as its cousins in the north and is a much more silent animal. It seldom howls at night, though it sometimes gives a yelping bark when it starts out hunt-

ing, and again when it slinks back to its lair in the dawn.

More often heard, though seldom seen, is the common Indian jackal—a sly, greedy, somewhat cowardly creature that skulks about on the outskirts of towns and villages to see what it can steal, and keeps people awake all night by its dismal howling. It sounds as if it were wailing, "Dead Hindoo—o! Where? Where? Where?"

It will wander up and down the streets, wolfing down all the refuse left lying about, will steal into inclosures and make off with a fowl, a lamb, or a young pig, and then, with a final yell of "Dead Hindoo—o," slink back to its lair in the early dawn.

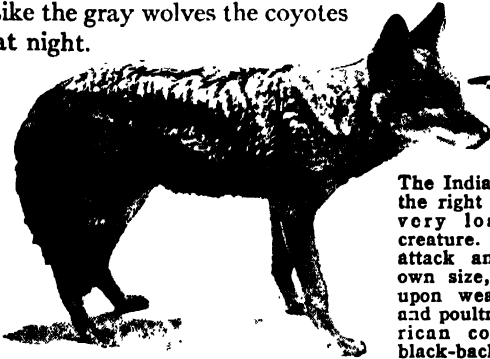
The Indian jackal is not much more than half the size of a wolf. It has a long, pointed snout, a grizzled, reddish-gray coat, and a thick, stumpy tail. Its air is timid and cringing, but it can snarl and bite and take care of its skin if it is cornered. When pressed by hunger jackals will hunt in packs, but they prefer to prowl round alone, as then the greedy things can eat all they kill or steal without having to share the spoils with their fellows. They will follow the lion or the tiger when those lordly beasts go hunting, but keep carefully out of sight until the great cats have killed and satisfied their hunger. Then when the coast is clear the jackals creep up to finish the remnants of the feast.

A Thief and a Coward

The black-backed jackal of South Africa is better-looking than its Indian cousin, but so far as character goes there is little to choose between them. It is a thief and a coward, and is detested by farmers, for it



Photo by N. Y. Zoological Society



able, but he is much more cunning and quite as much sport to hunt as a fox.

The Indian jackal to the right above is a very loathesome creature. He will not attack anything his own size, but preys upon weak animals and poultry. His African cousin, the black-backed jackal, is scarcely more lov-

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And where are all these men and dogs going? Just where Master Fox will lead them—up hill and down

dale, through marsh, thicket, and briar patch, over stone wall and hedge. He may even get away!

kills their poultry and young lambs and kids. And although it has not the pluck to attack full-grown sheep, the wretched jackal will sometimes creep up behind them and bite off their tails! This unpleasant animal has a bright reddish coat, but its back is covered with what looks like a small hearthrug of black fur spangled with silver.

The Home of a Young Jackal

Strange to say, although these jackals take care of their cubs, as all warm-blooded animals do, they do not keep them at home but provide them with a separate burrow of their own. This is usually a dugout that has been prepared by some other more industrious animal for its own requirements. But that does not worry the charming pair. If the burrow is not already deserted they simply turn the rightful owners out and use it as their own nursery. From time to time they visit their cubs to see that they are getting on all right, and they take food to them until the little things are old enough to go out and forage for themselves. There are no jackals in America, and a good thing it is, for nobody wants them.

You will find the cunning little red fox at home in most northern countries all the world round. Sly Reynard, as he is called in old England, because of his cunning ways, is one of the brightest and most intelligent of the dog tribe. He really looks very much like a dog, though his legs are rather short. He rejoices in a fine bushy tail, which is usually called a "brush." But a fox's eyes are more like a cat's, as in strong light the pupils narrow to upright slits instead of being circular like those of wolves, jackals, and all the dogs whether wild or tame. In some of his ways, too, a fox is decidedly cat-like. He stalks his prey, instead of running it down in true dog fashion, and he is very independent; he prefers living and hunting alone, or with his mate, to running in packs as wolves and wild dogs do, and he hates getting his feet wet!

The Cunning Ways of the Fox

In England no one is allowed to shoot the fox, but in the winter he is hunted with horses and hounds, just as he is hunted in America. This seems very hard on the poor beast; but all this persecution has so sharp-

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ened his wits that he knows how to hold his own, and there is no end to his wiles. Time and again this cute little animal will outwit all his two-legged and four-legged enemies and get safely away, leaving hounds and hunters tired out and disgruntled after they have been chasing him all day. Good luck to the bold little fellow!

Hounds hunt the fox by scent. With noses to the ground they follow his trail up hill and down dale, and to break the scent and confuse the hounds the fox knows many a cunning trick to play. He will double on his tracks, then spring aside and crouch under a bush or climb to the low bough of a tree.

There he will stay, quite still, and slyly watch the dogs tear madly by. Then he calmly comes out of his hiding place and trots off in the opposite direction. He will run along the top of a wall and slip down on the other side, jump a stream, or run over ice just strong enough to bear him but too thin to hold up the heavy dogs following on his trail. And when he is hunted on foot he will sometimes actually follow the hunters about, keeping always at a safe distance, so that his enemies cannot see him while he cunningly watches their proceedings.

Of course farmers do not love Master Reynard. He annoys them very much. Night after night a fox will raid the poultry yards and carry off the ducks and chickens, and it is the most difficult thing in the world to catch the sly thief at his tricks. Although most of his hunting is done in the evening or early morning, the fox is often out and about in the daytime as well. In summer he will lie up under a hedge or in long grass and spring out to catch the chickens running about in the meadows.

But he does some good as well as harm,

for he kills large quantities of troublesome field mice and woodchucks. A full-grown woodchuck is rather a big thing for a fox to tackle. It has sharp teeth, too, and knows how to use them. So there is often a stiff tussle before Reynard succeeds in killing his quarry, and he may get a sharp bite on the nose for his pains.

Fox cubs are fat, jolly little creatures dressed in thick woolly coats. In the summer they may sometimes be seen playing round outside their den like a lot of young puppies. They roll over on their backs and kick, bowl one another over,

and run merrily round and round chasing their own tails,

while the vixen, as the mother fox is called, watches them proudly from the doorway of her burrow. Both the father and mother

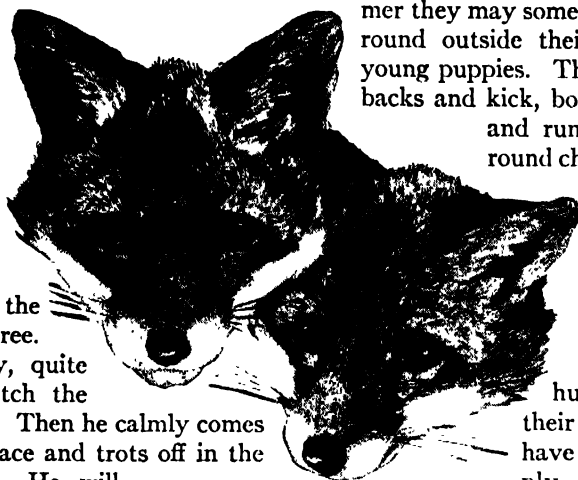
hunt to get food for their children, and they have plenty to do to supply their hungry little

family with enough to eat.

Early in the evening the hard-working parents start out on their rounds, and one or the other keeps coming back with a jack rabbit, a hare, a mouse, or a rat to feed the excited little cubs, who are impatiently

waiting at home for their supper.

The American gray fox, or Virginian fox, is a trifle smaller than its red cousin and has a gray coat with rusty red patches along its sides. He is not so well known as the sly Reynard, for he makes his home in the forests and seldom ventures on cultivated land. So he does not often kill the farmer's chickens, though doubtless he would be pleased to do so if he had the opportunity. "Gray Coat" is sly and cunning like all foxes, but he is not so shrewd and resourceful as Master Reynard. You see, he has not been hunted so much. He himself hunts small game, such as birds and mice. He eats reptiles, too, and insects, and sometimes goes fishing in the forest streams; and when animal food is



These pretty animals are red foxes, the typical fox of Northwestern Europe, about whose cunning ways so much has been written in proverb, satire, and fable. In England, in particular, Master Reynard has had to develop his shrewdness to an amazing degree in order to outwit the many hunters who pursue his trail. So he has probably become the "foxiest" fox in the whole world.

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scarce, he will satisfy his hunger with wild grapes and berries.

Gray Fox seldom lives in a hole in the ground; he likes to camp out in the open air, hidden in the thick undergrowth of the forests—or he may make his home in a hollow tree. The gray vixen almost always chooses a hollow tree to bring up her young ones in. She makes them comfortable and keeps them warm on a thick bed of dry leaves. There they are fairly safe from prowling beasts of prey when she leaves them to hunt for food.

The gray fox can run as swiftly as the red fox and can climb trees much better; and his quiet suit of mottled gray harmonizes so well with the tree trunks and tangled undergrowth of his woodland home that he is well protected from the sharp eyes of his enemies when taking a noonday nap.

The Kit Fox of the Plains

The smallest and prettiest of the North American foxes is the little kit fox that makes its home in burrows in the treeless plains of the western states. It is only twenty-four inches long from the tip of its pointed nose to its tail, and has a pale yellowish coat and a very fine brush. But most interesting of all the foxes in either the Old or the New World is the arctic fox that lives on the barren lands and moss-grown tundras on the borders of the arctic regions.

In the short arctic summer the arctic fox has a jolly time. There are arctic hares to chase and wild fowl nesting on the banks of every little stream, while the mossy ground is tunneled with the burrows of small mousy animals called lemmings. The fox can dig out just as many of these as he pleases with no trouble at all.

But this happy state of things does not last long. The time of plenty is

soon over and is followed by a long, long spell of bitter weather when the ground is frozen hard and there is scarcely anything to eat. All plants die down except the hardy mosses and lichens, and even these are hidden under a blanket of frozen snow. All birds except a few ptarmigan and redpolls wing their way southward to warmer lands. Most of the four-footed creatures disappear too. Except the arctic hares there are few warm-blooded animals left to keep the fox company through the long dreary winter. He may meet a herd of wandering reindeer or hear the howling of a pack of wolves; but reindeer are no good to a hungry fox, and as for the wolves, he certainly would not care to make *their* acquaintance.

The Fox That Changes His Coat

The wise fox knows how to make the best of things, however. When food is plentiful he starts making provision for the lean days to come. All through the summer he hunts the fat little lemmings, and those he cannot eat he puts into cold storage for winter use. In the arctic regions the ground is never quite free from frost, even in summer time, so the clever little animal digs down through the moist surface till he comes to the cold, icy layers below. Here he stores away several dozen lemmings, carefully covering them up with roots and moss, and there they remain in good condition, all ready for the days when the fox is hard up for something to eat.

The arctic fox also prepares for winter by changing his coat. In summer his fur is a smoky blue with white facings, but as soon as the warmer days are past it grows perfectly white all over, and so soft and thick that it is as good as an eiderdown quilt. So when winter comes the cold cannot penetrate his wonderful

This fox with its heavy fur coat and bushy tail comes from Alaska, where, like many other animals of the region, it grows to large size as compared with its relatives of southern climes.

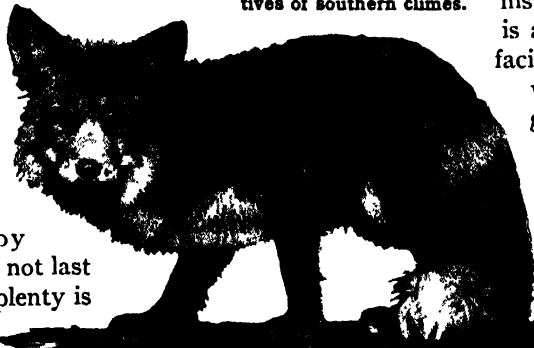


Photo by N. Y. Zoological Society

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white coat, and he can creep over the snow without being too quickly discovered by the prey he is stalking, or by the grim gray wolf that would turn the tables on the wily little hunter by making a meal of him.

The arctic fox does not go to bed all winter, although he has a comfortable little hole in the ground to rest in and plenty of food in his larder. He keeps his private stores for emergencies and is out and about on most days looking for something to eat. He will follow the polar bear, hoping that the great beast will leave him a few scraps of the seals he catches on the edge of the frozen sea. He prowls round the camps of whalers, ready to snatch up anything left unguarded, from seal meat to leather boot laces; or robs the larder of other foxes when they are away from home.

So the white fox does not fare so badly throughout the long cold winter months, in spite of the fact that it is a hard struggle to find enough to eat in those desolate wilds. But he must be glad when at last the snow melts and the summer arrives—with the surprising suddenness with which it always comes in the Arctic.

Springtime in the Arctic

Little trickling rills run merrily over the ground, softening the frozen earth. Plants spring up, and all the flowers bloom at once, turning the dreary tundra into a garden as if by magic. Then from their holes and their burrows the winter sleepers come out into the world again. Birds fly up from the south to nest and rear their young while these delightful days last.

And there is good hunting for little foxes once more.

The arctic fox then sheds his winter coat as quickly as possible and appears in his blue summer suit again. And while he is enjoying his brief summer, the wise little animal doesn't forget the bad times ahead, but starts again at once to stock his larder for the coming winter.

More like wolves than like foxes, in their ways, are the wild hunting dogs that roam through the forests and open country of Asia and Africa, running down and killing every living creature.

The dhole (dōl), or "red dog of the Deccan," as it is sometimes called, is more feared than any other animal by the forest dwellers of India.

It is bigger and stronger than the jackal, and relentless in its pursuit of prey. No creature, no matter how bold and powerful and swift it may be,

can hope to escape when once the red dog is on its trail.

Dholes hunt in packs, both by night and day. Ten, twenty, or more of these savage dogs wander about together, killing every animal they overtake. They follow their quarry with a horrible, silent determination—for dholes seldom give tongue while hunting, although their hoarse bark may be heard echoing through the jungles at night. They outrun the fleet-footed deer and antelope. They just follow and follow the poor thing until it can run no more, but drops from exhaustion. They pull down the wild bulls and the noble sambar deer—in spite of horns and antlers. Even the lordly tiger will leave his kill and seek refuge on the low branch of a tree when the dholes are hunting in his



Photos by Canadian National Rys., N. Y. Zoological Society, and Nature Magazine

Here are three members of the fox tribe. Above to the left is a silver black fox, whose fur is very valuable. Above to the right is a blue, or arctic, fox, which you see here in his blue summer coat. In winter his fur becomes white and very heavy. Below them is a gray fox.

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direction. And there he will stay, not daring to show himself until the fearful red pack has passed.

The African wild dog is a long-legged beast with an odd-looking coat covered with spots and patches of gray, black, yellow, and white. It is quite as fierce and determined as the dhole; it is said that even a lion will not face a pack of these ferocious hunters. They are a terror to South African farmers, since besides hunting wild game, they kill cattle and sheep and other animals.

The Australian dingo is much more dog-like than the dhole or the wild African dog, and it is supposed that its ancestors were tame dogs who went back to wild life before the days of the first white settlers in the country. Yet strange to say, dingoes do not bark, but express their feelings by dismal howls. Dingo dogs are sometimes caught

and tamed by the natives of Australia. But although they are intelligent and become fairly gentle and obedient to their masters, sooner or later they all hear the call of the wild and go back to a free and roving life.

Our tame dogs are not descended from the wild dogs of Asia and Africa. They are more nearly related to the wolves and jackals, though it is impossible now to say exactly who were their ancestors. All we know is that many thousands of years ago, when man himself was almost as wild in his ways as his

four-footed friends and foes who lived all round him, he began to tame some of the more intelligent animals. When out hunting the wild beasts, a man may now and then have found a litter of wee, helpless cubs that had lost their mother, and have taken them home for his children to play with. Then when they grew up the man would train them to go out hunting with him and to help him capture other animals.

So man made friends with some of the creatures of the wild. The young wolves grew up with the wild men, worked for them, and shared their food. And as centuries passed and man grew more and more civilized, his tame animals changed too. They lost many of their savage ways, learned to defend their master and to guard his property. As time went on they changed in appear-

ance, too, some in one way, some in another, until nowadays it would be hard to count all the different kinds of dogs there are in the world. But no matter whether they are sheep dogs, wolf hounds, great Danes, or poodles, their ancestors in those far-off, long-forgotten days were all gaunt, savage

wolves, cunning jackals, or some other wild, hunting, carnivorous animal very much like them.

When first you meet a hyena, either in the wilds of Africa or, more happily, when it is safely behind bars in a zoölogical park, you might naturally

The raccoon dog, as this animal is called, is found in the forest lands of South America, where it lives a solitary life in the dense woods, burrowing into a hole in the daytime and coming out to hunt small lizards and mammals at night.

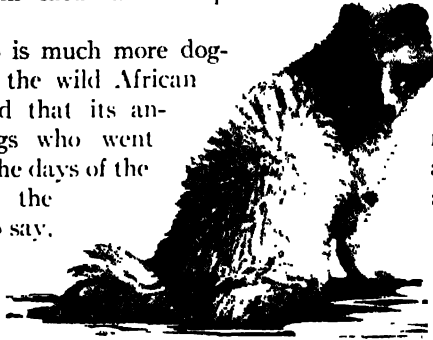


Photo by N. Y. Zoological Society

The two animals below are sometimes called foxes, but they are really wild dogs which, like the wolf and unlike the fox, hunt in packs. The one to the left, sometimes called a hyena dog, comes from Africa; while the one to the right, called Azara's dog, is a native of South America.



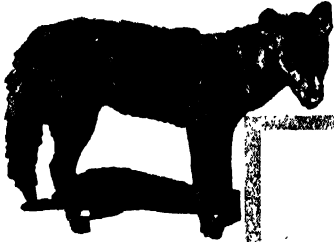
Photo by N. Y. Zoological Society

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think it was one of the dog tribe, for there certainly is something both doglike and wolflike about the creature. But this would be a mistake. Hyenas are not dogs and they are not cats—no dog or cat would own them as relatives. They form a family of carnivorous animals all by themselves, and come

between the cat tribe and the dog tribe.

There are



only three kinds of hyenas—the spotted, the striped, and the brown hyena. They all live in Africa or Asia, and it would be hard to say which is the most unpleasant animal of the three.

All are ugly, cowardly brutes. Although they are so strong that they can crack the thigh bone of an ox in their jaws, hyenas do not hunt openly or fight bravely for their food. No, they slink round and gobble up the leavings of bolder animals, steal the remains of the kill of a lion or a tiger, or feast on any kind of bad, decaying stuff they can find lying on the ground.

The Cowardly Hyena

Yet, like all cowards, hyenas are ready enough to attack creatures weaker than themselves. They steal poultry, worry sheep, and chase cattle, though even a sheep or a goat can hold a hyena at bay as long as it boldly faces the brute. But the moment it turns, the hyena is after it.

One of its favorite tricks is to startle a herd of grazing cattle by springing up suddenly right under their noses. This, of course, makes the nervous animals stampede.

Then, when it has them all on the run, the hyena dashes after them, leaps at one from the rear, and pulls it to the ground.

The spotted hyena is the largest and most powerful of the three. It has a buff coat marked all over with dark spots, a large head, a ferocious expression, and hind legs that are much shorter than its front ones. This gives the animal an awkward, shambling gait. It is sometimes called the "laughing hyena" because instead of roaring, barking,

or howling as most wild animals do, it yells as if with laughter, like a maniac, shaking its sides the while. It seems to be enjoying some horrible joke.

This laughing demon is somewhat bolder than the rest of its



Photos by N. Y. Zoological Society, and American Museum of Natural History

Above to the left is a small-eared dog which runs wild in South America. In the center a pack of hyenas is making a picnic lunch of a fallen hippopotamus. To the right is a dingo, a wild dog from Australia which, years ago, may have been tame but now roams the ravines and bush like a wolf.



family. It occasionally runs in packs, and when backed by its partners in crime it is a most dangerous beast and may attack quite large animals, or even a man. But its favorite sport is to kill and carry off sheep, goats, and dogs from African villages, or cruelly maul mules and horses tethered near camps. It is a most thoroughgoing thief and will carry away all sorts of things that can be of no possible use to it. On one occasion a spotted hyena lapped up the soapy water left in a rubber bath outside a traveler's sleeping tent. The noise disturbed the man in the tent and he looked out to see what was going on. Of course the hyena immediately bolted, but he took the bathtub with him. Next day the traveler found it a long way off all crushed and battered. Even the hyena couldn't

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manage to eat a rubber bathtub, although he had evidently tried his best to do so!

The striped hyena is to be met with prowling about in India and Southwest Asia as well as in Northeast Africa. It is a hideous beast, with a rough, dirty-looking gray coat marked with black stripes that go round its body like hoops round a barrel. Its mane of coarse hair stands up on its back and shoulders like a crest. It, too, has short hind legs, and it is quite as ungainly as its spotted cousin; and when it snarls it displays its fangs in a horrible grin.

The striped fellow is the most cowardly of the lot. It hides near villages all day and shuffles about in the streets at night, picking up all the refuse it can find. Then it slinks back to bed in the early dawn before anyone is about to catch it at its tricks. It does not dare to face a man or attack a big animal, but, like other hyenas, will kill sheep, goats, and dogs, and rob poultry yards.

The brown hyena is a South African beast. It has the same queer, sloping back as the other hyenas, for it too has short hind legs,

but its coat of long hair is plain brown without any spots or stripes. There are a few stripes round its legs only.

The Boers call this animal the "strand wolf" because it prowls along the seashore hunting for crabs and dead fish. But it is not seen so often now as it used to be, and in a few years' time it will probably become extinct.

There is another peculiar South African animal, called the aard-wolf (ärd), that looks like a small striped hyena, although it is not a hyena at all. It is a somewhat feeble animal, and its teeth are too small and weak to do much harm to other creatures. So it feeds chiefly on ants and grubs or any scraps it can find when it is poking about on the ground. The aard-wolf does not want to fight anyone, but if it is obliged to protect itself it has a curious habit of kneeling down to prevent its enemy from biting its paws. Hyenas sometimes behave in the same strange way, so it would seem that the aard-wolf must be related to them, in spite of its peaceful nature.



This ungainly beast is the spotted hyena, one of the most unpleasant creatures in all the animal kingdom. It is much like the wolf in character, and is even more greedy. But perhaps we could forgive it all its faults if it were not that it assails our ears with a hideous, mirthless "laugh" that makes one's blood run cold.

Photo by N. Y. Zoological Society

MAMMALS

Reading Unit

No. 7

BRUIN THE BEAR AND HIS HOMELY LIFE

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

Who takes care of baby bears?
4-311-12
The ways of the grizzly bear, 4-
313-14
How a black bear spends the win-
ter, 4-316
How the polar bear gets along

in the Arctic, 4-320-21
How polar bears educate their
young, 4-321-22
The pandas, 4-322-23
Why raccoons like to stay near
water, 4-323
Coatis and kinkajous, 4-324

Things to Think About

In what ways do bears differ
from the dog and cat tribes?
How is a bear able to steal honey
from a bee's nest?
Why have grizzly bears become
scarce?

Why do bears sleep during the
winter?
What kind of food does a polar
bear get in the Arctic?
Why are raccoons found near the
water?

Picture Hunt

What bear fishes for salmon?
4-312
Do black bears and grizzlies get
along well together? 4-313
What bear is used in Japan for
religious purposes? 4-317
What is the real "teddy bear"?

4-319
What mammal is hunted by polar
bears? 4-321
What animal does the giant panda
resemble? 4-322
Why are raccoons hated by farm-
ers? 4-323

Related Material

What other animals, besides
bears, go to sleep for the win-
ter? 3-467, 4-359, 361, 372

What mammal, besides the kinka-
jou, uses its tail as a fifth hand?
4-262

Leisure-time Activities

PROJECT NO. 1: Visit the bear
dens at the zoo. Take along a
few lumps of sugar or some pea-
nuts. Watch the raccoons at

feeding time.
PROJECT NO. 2: Find a good
bear story in a book or magazine.

Summary Statement

Most bears are very large, but
largest and most ferocious of all
is the grizzly. Bears like honey,
but will eat berries, fruit, insects,

and small mammals. Some of
them like to go fishing. Bearlike
animals are the raccoons, pandas,
coatis, and kinkajous.

BRUIN THE BEAR AND HIS HOMELY LIFE



Photo by Berlin Zoological Gardens

Even little bears have to learn how to walk, but this brown cub has made things much harder by choosing

a narrow log to practice on. Luckily, he is a roly-poly little fellow and probably won't mind a spill.

BRUIN *the* BEAR and HIS HOMELY LIFE

Most of the Shaggy Bears Are Friendly Enough, but Look Out for the Bad Ones—or for Any of Them When They Are Fretted!

BEARS are not especially dangerous animals, as a rule, but there are times when it is well to keep as great a distance as possible between yourself and them—and to tease bear cubs when their mother is anywhere about is little short of suicide. For a female bear is a very careful parent. She feels sure that everyone wants to steal or hurt her beautiful children, and with a “whuff!” of rage she will hurl herself furiously at anyone who dares to go near them.

“Oppress not the cubs of a stranger, but treat them as sister and brother;
For though they are little and fussy, it may be the bear is their mother.”

Bear cubs are about the funniest of all little woolly creatures—just like toy “teddy” bears, and surprisingly small at first, considering the size of their parents. But their mother thinks the world of them and will guard them with her life. As soon as

they are old enough to waddle about on their stumpy little legs she takes them out walking with her in the woods, and teaches them to dig up ants' nests, slap frogs out of the water with their padded paws, and to do other useful things.

“Life is a joke that is just begun” to the small bear cubs. They are as full of tricks and playful ways as can be. They run and tumble about on the ground, have romping games of hide-and-seek round the tree trunks, stand up on their sturdy hind legs to box each other with their paws, and have lively wrestling matches. The impudent little things love to tease their mother, too. When she is lying down taking a little nap they scramble over her, pull her fur, and bite her ear to wake her up again. But the old bear doesn't mind. She likes a joke as much as a dog does, and quite enjoys the fun of it all.

But where is the father all this time? Well, you won't find him playing around

BRUIN THE BEAR AND HIS HOMELY LIFE

with his family. A father bear is rather a grumpy old fellow. He doesn't care to be bothered with children, so he leaves the mother to bring up the cubs all by herself and wanders off to enjoy life alone.

Big Bears and Small Bears

Of course there are bears and bears—big bears and small bears; black, brown, and white bears; some at home in one country, some in another. But all bears have a strong family likeness and you could hardly fail to recognize one wherever you happened to meet it. As a rule they are rather clumsy, heavy-looking animals, clothed with rough shaggy hair. They have long snouts, small, short-sighted eyes, and a tail so short that it is hardly worth mentioning. Their legs are thick and rather short, and they lumber along with an awkward, rolling gait, planting their great paws flat upon the ground with every step they take. Yet it is surprising how quickly they get over the ground in this way—as you would soon find out if ever you happened to be chased by a bear! Most bears can swim well, too; and all but the very biggest bears are clever at climbing trees.

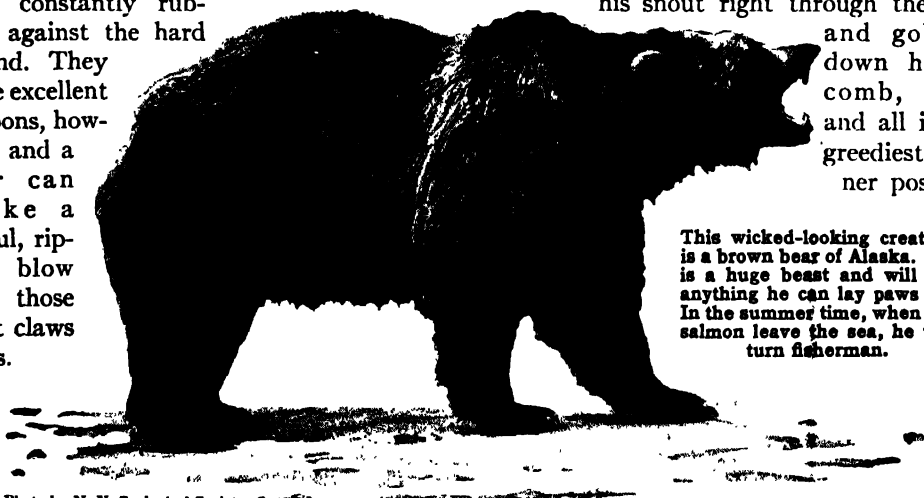
Bears have five toes on all their four feet—instead of five on the front paws and four on the hind ones, as cats and dogs have. Every toe is armed with a long curved claw, which cannot be drawn back, like a cat's claw; so the tips of the claws get worn down from constantly rubbing against the hard ground. They make excellent weapons, however, and a bear can strike a fearful, ripping blow with those blunt claws of his.

Although they are called beasts of prey bears seldom hunt other animals. They will fight fiercely enough if they are attacked or enraged, or will kill for food when pressed by hunger; but otherwise they are usually peaceful, rather slow-going animals, and very much alarmed at the sight of a man. A bear can smell a man even before he sees him, since his keen nose makes up for his poor sight. The moment he scents his enemy he wastes no time, but bundles off in a desperate hurry with a loud "whuff" of disgust.

Bears will eat almost anything—roots, fruit, berries, insects, mice, and other small creatures; they really do not mind much what it is. They love sweet things and are passionately fond of honey. Big, heavy beasts as they are, they manage to climb the trunks of quite tall trees to get at the sweet sirup stored in a hollow by the industrious bees.

A Battle with Bees

Of course the bees have something to say when the great thief tries to poke his nose into their nest, and while he works away with teeth and claws to enlarge the opening they buzz angrily round and round his head and sting him on the nose and lips. But the bear won't be driven off that way. He rubs his smarting nose on the bark of the tree to rub the tormenting insects off, and keeps clawing away until he reaches the honeycomb. Then what a feast he has! He pushes his snout right through the hole and gobbles down honey, comb, bees, and all in the greediest manner possible.



This wicked-looking creature is a brown bear of Alaska. He is a huge beast and will eat anything he can lay paws on. In the summer time, when the salmon leave the sea, he will turn fisherman.

Photo by N. Y. Zoological Society

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Photo by Field Museum

In bear circles the grizzly, which you see above, has everything his own way, for he is a surly, savage beast. In certain national parks food is put out for the bears every evening at special feeding grounds, and anybody may come and stand a slight distance away to watch.

Bears will do almost anything to get honey. They simply cannot resist it. In Siberia the brown bears often try to climb the telegraph poles, for when they hear the humming of the wires they think there must be a wild bees' nest inside or up at the top.

The great grizzly is the largest of the bears in the United States. We might almost say the largest bear in the world, as there are only two others who rival him in size—the huge brown bear of Alaska and the polar bear of the arctic seas.

The Ill-tempered Grizzly

Besides being the biggest the grizzly is the most ferocious of bears. In olden days the early settlers in North America lived in constant dread of the great, lumbering animal that ravaged their flocks, killed their horses and cattle, and savagely attacked every man who came in his way. He used also to hunt the bison in the days when enormous herds of those fine beasts roamed freely over the plains and through the fertile valleys of the West.

First the black and brown bears shuffle in, some with their funny little cubs. They gobble their dinner as fast as they can, for they know that as soon as the great grizzlies arrive, they will be shoved away, especially by the female, who is very bad-tempered indeed.

But there are no bison now for him to hunt, and the grizzly himself, for his sins, has been hunted almost out of the country. His last stronghold is among the Rocky Mountains, where he still hunts deer and wapiti, and now and then has a terrific battle with a cougar or a big moose.

The Wisest of Bears

Yet even such sport as this is not to be enjoyed so often as in bygone days, and the big rough bear is often reduced to hunting such humble creatures as mice and insects for food, or forced to satisfy his appetite with immense quantities of berries, wild fruit, nuts, acorns, and grass growing on the hillside. But he does very well on the whole, and even grows fat on this meager fare. He knows how to take care of himself, for the grizzly is the "wisest of the bears." He has learned to respect the man with a gun and keep out of his way, and is much too wary to fall into the traps set to catch him unawares. Then if he has the luck to kill some big animal, and so has more meat than even

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he can manage all at once, he has the sense to save some for another time. He carefully buries it in a place where he can easily find it when he wants it.

This thrifty habit of his actually saved the life of a ranchman not long ago. The man shot at a grizzly, who had been stealing his colts. But he only wounded the bear, and the infuriated animal rushed at him and felled him to the ground with a terrific blow of its paw.

Luckily for the man the bear was not hungry, as he had just made a hearty meal of one of the young colts. So instead of eating his prey, he scraped a shallow trough in the ground with his claws, dumped the man into it, and after covering his prize with a thin layer of earth, he went off to rest and regain his appetite. Now the man was not killed, but only stunned by the blow. Soon after the bear had gone he recovered consciousness, pushed away the earth, which was only loosely thrown over him, and made his escape. When that grizzly came back later, he must have been about as disappointed as a bear can be, to find his cellar empty and his dinner gone!

When cold weather sets in and food is harder and harder to find, the grizzly retires for the winter to a cave or a hole in the hillside. There he sleeps until the first green shoots

push their way through the ground. Then the great bear wakes up and comes out into the world again, and one of the first things he does is to stand upright on his hind legs and score the trunk of a pine tree as far above his head as he can reach with his claws.

This he does, no doubt, partly to sharpen his claws and get them ready for use again, but partly, it is suspected, to warn off other bears from poaching on his hunting ground. He leaves his mark where it can plainly be seen by all comers. When a second bear comes along and sees the mark he, too, will stand up and claw the tree. If he can score the bark as high as the first mark, or even above it, he knows he is just as big and strong as the other fellow and has nothing to fear from him. So he will stay in the neighborhood, if he

wants to, and hunt where he pleases. But if the second grizzly cannot reach so high as the first one, he usually decides that it would be wiser to move on and try his luck somewhere else.

From his name, you would expect the grizzly bear's coat to be a grizzly gray, but it is really brownish-yellow mixed with black. It seems likely that he was first called the "grisly," and not the "grizzly," bear. At least, that is the way the word is spelled in old books

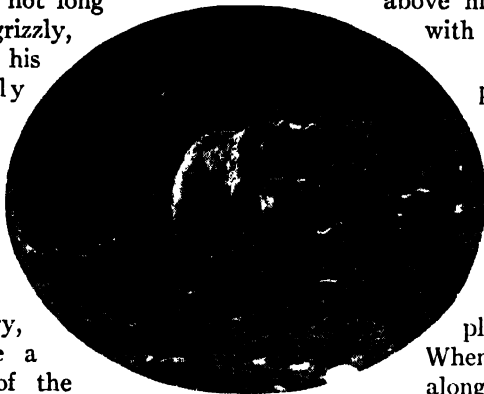


Photo by National Park Service

Perhaps this round-eyed little cub is too young to know about cameras, so he's watching this one cautiously. But the mother grizzly bear is used to having her picture taken by visitors to her home in Yellowstone National Park. In nature she would never allow anyone to come so near her baby.

Here are two black bears enjoying a playful wrestling match. With their soft padded skins and rounded bodies, they look as though they had been built for exactly that!

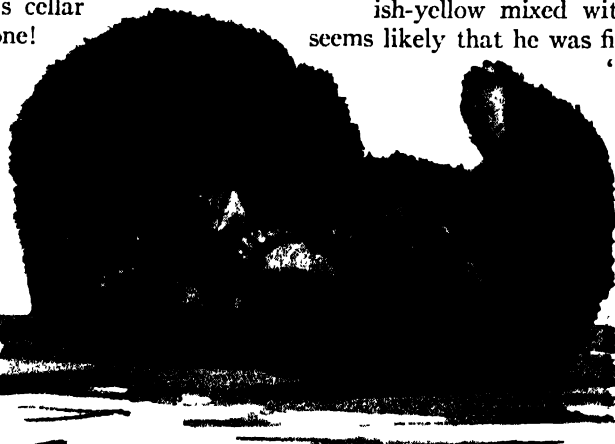


Photo by Northern Pacific Rys.

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Photo by N. Y. Zoological Society

Bears are very playful and sweet-tempered in their zoo homes, for captivity seems to agree with them. One

of the happiest families in New York City is this brown bear family at the New York zoo.

of travel. Since "grisly" means "terrible" or "horrible," it is a much better name for this great fierce bear. Terrible he certainly is when he is roused to wrath. A full-grown grizzly may be seven or eight feet in length and enormously bulky. His paws measure as much as a foot across, and his great curved claws are five or six inches long. In olden days, before the coming of the white man, the Indian brave who could wear a necklace of these terrible claws to prove that he had killed a grizzly in fair fight was a proud man, honored for his courage by all his tribe.

While the grizzly is the largest and fiercest, the black bear is the smallest and most harmless of

North American bears—though as he measures quite five feet from the tip of his nose to his queer little tail you can hardly call him a *small* animal. He is slighter and much more shapely than the grizzly or the big lumbering brown bears of the Old World, and his coat is smooth and glossy instead of rough. So altogether he is less like a barrel on four legs, and does not look as if he had been covered with a shaggy fur rug.

At one time the black bear wandered freely in almost all the woods of North America, and he is still fairly common in the more lonely forest regions. But it is hard to get a glimpse of him, for he is

very shy and flees for dear life if he suspects a man is near. If he is cornered and cannot get away, the black bear will defend himself bravely and deal out smashing

A female bear is a very affectionate, thoughtful mother, but she cannot take such good care of her babies as the keeper can, even if she spends all her time at it—and what else has a captive mother bear to do?

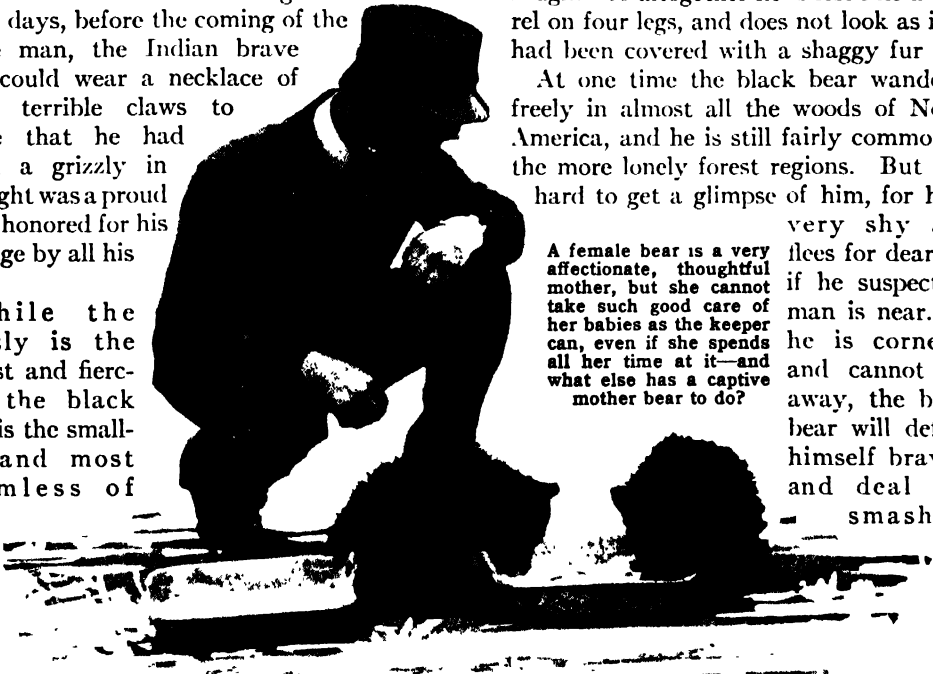


Photo by N. Y. Zoological Society

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blows with his big paws to anyone who interferes with him; and the she-bear, if she has her cubs with her, is always savage and ready for a fight.

Although the black bear is so shy he is very inquisitive. He is fond of creeping quietly up, under cover, to watch people who are camping in the woods. He is very much interested in the ways of these two-legged creatures, and will

peer at them cautiously for a long time if he thinks no one sees him. But as soon as he is discovered, off he goes as fast as his legs will carry him.

Like most of his kind the black bear does not care much for company. He leads a free and roving life, wandering up hill and down dale through the woods and marshy lands, no doubt enjoying himself in his own solitary fashion. In the springtime he is fond of prowling by the lakes and running streams, munching the fresh, juicy shoots growing along the banks and fishing for crayfish and suckers. In the summer he betakes himself to the gloomy swamps, where he feeds on roots and nettles, frogs and insects, and has no end of fun wallowing, like a pig, in the mud.

How a Bear Spends the Winter

When the days begin to grow cooler he roams over the countryside feasting on fruit and berries, digging ants out of the ant hills and robbing every bees' nest he can find. Sometimes, for the sake of a change, he visits the farmer's fields and gets himself disliked by tearing up and trampling down the

corn and biting off the ripening ears. Or worse still, he may take to killing sheep, calves, and pigs—especially pigs, for a black bear has a passion for fresh pork, and can never resist the temptation to steal a fat young porker whenever he has the opportunity.

This weakness of his often leads the bear into trouble. For the farmers, knowing his tricks, lie in wait for him near the pigsties, and shoot the thief when he comes prowling round after he thinks everyone has gone to bed.

By the time winter comes the bear is very fat from feasting on the berries, nuts, mushrooms, acorns, and all the good things that grow so abundantly in the autumn. He then looks about for a comfortable spot where he may rest undisturbed

through the cold months. An old hollow tree or a rocky

Bears are bears the world over, but they are not all alike in color, shape, and size. At the top is a kodiak bear from Alaska. Although the picture doesn't show it, he is an enormous creature. In the center is the Admiralty bear, also from Alaska and also a member of the brown bear tribe. Below is the Syrian bear; he is rather small, and in summer wears a coat of a pale rusty brown.



Photos by N. Y. Zoological Society

cave suits him nicely; or he may make a den for himself by scraping away the earth under the upturned roots of some fallen forest tree. The first heavy fall of snow shuts him in and keeps him warm and cozy while the storms rage and the wild winds blow in the world outside. In this safe retreat the bear curls himself up and waits for the return of spring. But he is not a very heavy sleeper, and on mild winter days he often leaves his bed for an hour or two, and scrapes about outside his den to see if he can find anything to eat under the snow.

To say that a black bear may sometimes be a brown bear sounds rather silly. But American black bears and brown cinnamon

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bears are really brothers or sisters wearing coats of different color. A black bear may have brown cubs and a cinnamon bear black ones, or there may be both black and brown cubs in the same litter. So the difference between a black bear and a cinnamon bear is merely a question of color.

The Only Bear in South America

The only bear that makes its home in South America is the little spectacle bear. It has a black coat, a white waistcoat, and white cheeks, while round each eye is a large reddish ring that makes the bear look as if it were wearing a pair of horn-rimmed spectacles.

Bears all the world over are very much alike in their habits. The brown bears one may meet prowling about the wild wooded districts of Europe and Asia behave in much the same way as their cousins in America. They eat fruit, roots, berries, insects, small creatures of all sorts, and of course honey when they can find a bees' nest. They sometimes kill sheep and cattle and worry the farmer by spoiling the grain, and bears in captivity will eat anything from a bun or a jar of molasses to a leg of mutton.

Bears are wonderfully

contented in zoölogical parks and gardens, where they really live in the lap of luxury. They soon settle down to the new way of life and seem thoroughly to appreciate having comfortable quarters and plenty of good food provided for them, instead of having to be out in all weathers to hunt for every mouthful they eat.

But bears are appallingly greedy. They want to eat from morning to night, and spend the best part of the day begging for tidbits from visitors to the zoo. To attract attention they sit up on their hind legs or stand bolt upright, wave their paws, and go through all sorts of ridiculous antics, hoping to be rewarded by a shower of cakes and biscuits.

Carefree Life in a Zoo

And since they have nothing to worry them and no enemies to fear, these captive bears are remarkably light-hearted and frolicsome. Not only the cubs but great grown-up bears, whom you would expect to be more sedate in their behavior, are always chasing

This small black bear comes from Northern Japan, where he is worshiped by a native tribe. Once a year they have a religious feast—not for him, as you might expect, but upon him!

each other about and playing mad pranks on their companions. When one old fellow is having a quiet snooze in his open-air playground, another one will amble slyly up behind him and give him a smart cuff on the ear. Then he whisks round and bundles off as fast as his legs will carry him, while the sleepy bear starts up, and seeing no one near

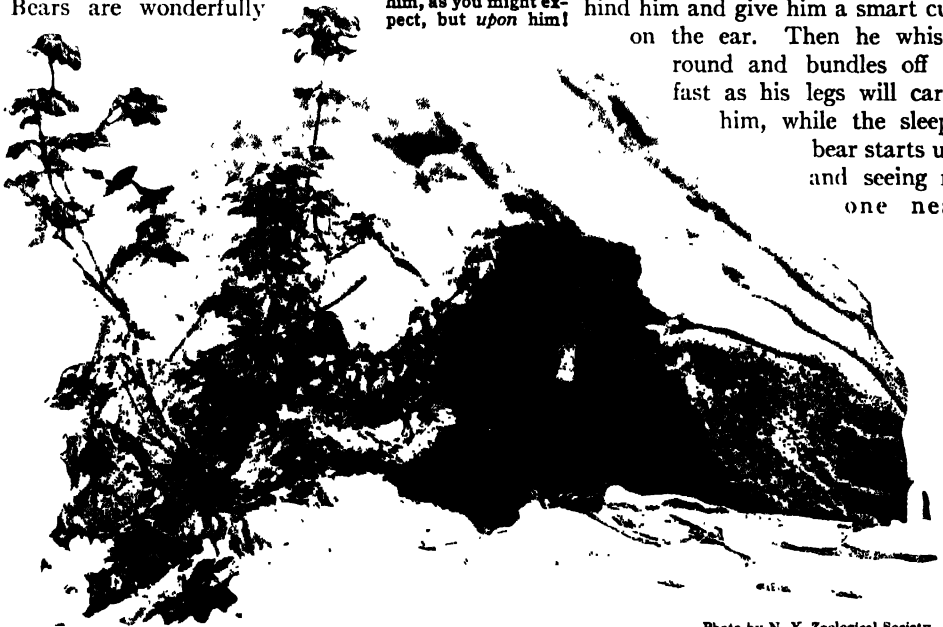


Photo by N. Y. Zoological Society

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him gazes round with a "Who did that!" expression on his face.

There are black bears as well as brown bears in the Old World, and even funny little blue bears that live in Tibet. The Himalayan black bear that roams through Asia from Persia to China has a white chin and a large white crescent on his chest. In the summer his coat is quite short and smooth, but in winter the fur on his shoulders grows so long that he looks as if he had a hump on his back.

One of the smallest bears is the Malay bear that lives in the East Indies. The funny little black fellow is not much bigger than a big sheep dog. He has a pale yellow snout and a patch of the same color on his chest, and is very clever at walking on his hind legs. When living at his case in a zoo he is fond of showing off this accomplishment. He has a number of other amusing tricks.

If you give him a lump of sugar—which he always finds a great treat—he cracks it with his teeth into tiny pieces and sticks them on the back of his paw. Then he licks the sugar until his paw is covered with sticky syrup, which he laps up with great delight. When he has nothing else to amuse himself with, the comical little animal passes the time by wrinkling up his odd-looking snout as if it were made of indiarubber.

"Old Baloo"

The Japanese black bear is quite as small as the Malay bear but is of heavier build and has no light mark on his chest. He, too, is full of antics, especially when he is a cub; but he has such a shocking temper that no one cares to keep him as a pet for long.

The sloth bear of India, or "old Baloo," as the natives call him, is the least bearlike of the bear family. He is a mournful-looking animal, and when he has nothing else to do,

he comforts himself in his dejection by sucking his paws and making a queer, humming noise at the same time.

Old Baloo has a very long coat of shaggy black hair which hangs down all round him almost to the ground. His hind legs are very short, so his gait is most ungainly. When he tries to run he humps and bumps along in a ridiculous way, just as if someone

were batting him on from behind.

To add to his queer appearance the sloth bear has a very long flexible snout of a dirty gray color and a pair of loose, baggy lips that he pushes out in a pouting fashion to make a kind of funnel. With this

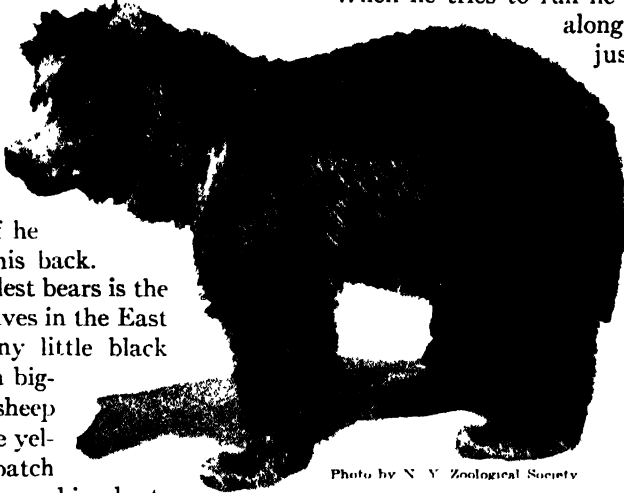
strange arrangement he sucks honey from the wild bees' nests, and draws up ants from their hills and burrows. Of white ants, or "termites," he is especially fond.

Whenever he finds one of their big hills, he scrapes away at it with his long claws until he has made a large hole in the side. Then he puffs and he blows and he puffs and he blows till he has blown all the dust and loose earth away and can poke his funnel-shaped snout into the nest and suck the ants and ant grubs out of house and home!

When he cannot have a feast of white ants for dinner the sloth bear contents himself with a light repast of fruit and flowers—especially the beautiful white flowers of the mahiva tree that scatters its blossoms on the ground every night in early spring. It provides a rare treat for Baloo, as well as many other creatures that live in the jungle.

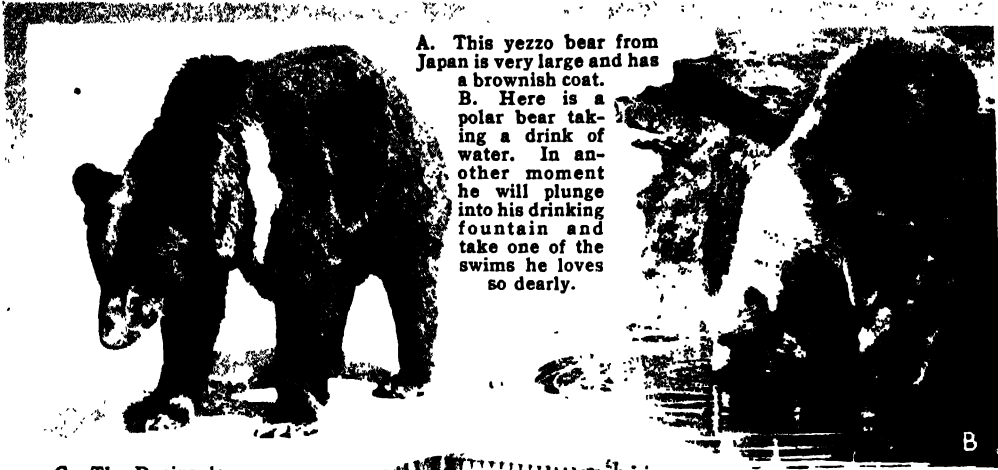
Ugly Little Balooes

Like all bears Mother Baloo is devoted to her cubs. She has two or sometimes three at a time, and ugly little things they are, though their mother seems to admire them.



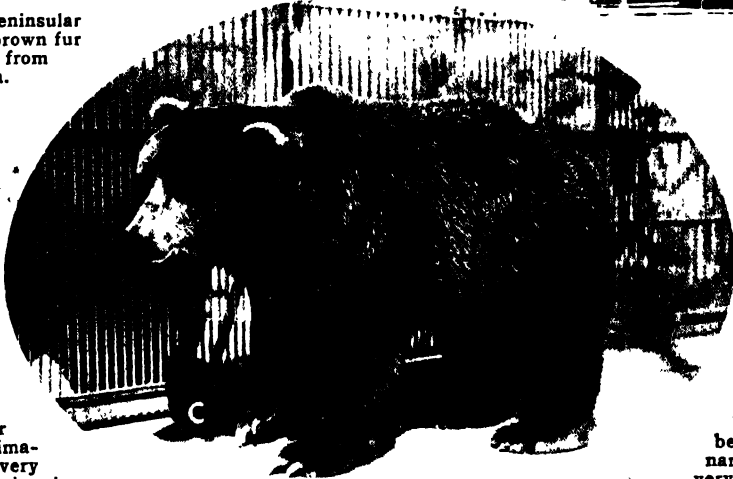
Here is a young fellow from the New York zoo who was nicknamed "Admiral"—possibly because he liked the water. He is an Alaskan grizzly.

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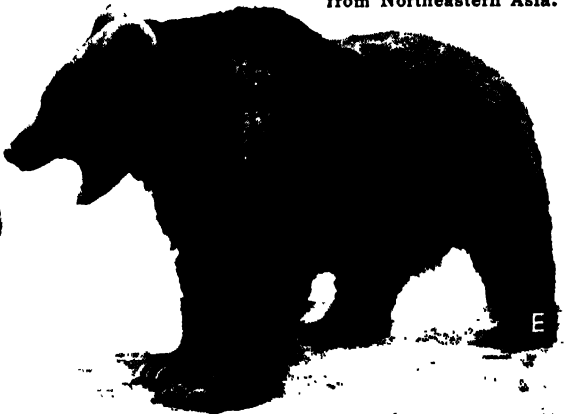
A. This yezzo bear from Japan is very large and has a brownish coat.
B. Here is a polar bear taking a drink of water. In another moment he will plunge into his drinking fountain and take one of the swims he loves so dearly.

C. The Peninsular bear has brown fur and comes from Alaska.



D. The black bear of the Himalayas is very fond of swimming and climbing. His coat is a glossy black, but he wears a touch of white on his chest.

E. The hairy-eared bear gets his name from his very fuzzy ears, which are just like those of a "teddy" bear. He is a cinnamon bear from Northeastern Asia.



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She carries them about on her back until they are a few months old. There they cling to her shaggy coat with their claws, which are very long and strong. When she stops her promenade to dig into an ants' nest or to munch a little fruit, the little bears tumble off her back and play around until she is ready to go on again. But as soon as she moves they scramble to their seats once more and continue their ride. After a while the cubs grow so big that there is not room for more than one on mother's back; so they take turns riding pickaback, while the others amble along by her side.

If we leave the hot jungles of India and journey over land and sea to the shores of the Arctic Sea, we shall not have to wait long to meet one of the most famous of all the bear family; this is the great polar bear of the northern seas and ice fields.

The polar regions seem a strange place for a bear to live. There are no trees or shady thickets to furnish shelter, no fruit or honey such as bears love to eat. In fact there seems to be nothing to induce any animal, above all a bear, to stay in such a desolate, unfriendly wilderness.

But the polar bear is not quite like other bears. He is wonderfully fitted in every way to stand the icy cold, and to get along without nearly every kind of food that most bears live on. So he makes his home among the snowy wastes and drifting ice floes right up at the top of the world.

The polar bear is not so stout and burly as the great grizzly, but he is larger in the body. Seven or eight feet is not an uncommon length for a polar bear, and now and then explorers have seen one that must have been twelve or thirteen feet long. He has a smaller, narrower head than most bears, and a very long neck, and though he is flat-footed, like all his family, he moves much

more lightly and gracefully than most of them do. His warm fur coat is silvery white tinged with yellow here and there, and thanks to it, the huge animal is almost invisible in the great white world in which he lives. The soles of his feet are shod with fur, so his footsteps are absolutely noiseless and he never slips about on the ice and frozen snow.

The sea, not the land, is the true home of the polar bear. He spends almost all his life swimming in the icy water or wandering about on the ice floes or snow-covered wastes along the shore. He crops the salt grass which grows among the hummocks just beyond the coast line, munches seaweed, and gathers berries from the bogs when the frozen surface of the ground thaws for a few short weeks in the arctic summer.

But the bear's chief occupation is hunting the seal—and wonderfully clever he is at it. He stalks the seals as they bask on the seashore, just as a cat stalks a mouse. Nearer and nearer he creeps, with his long body close to the ground so that he can hardly be distinguished from the rough hummocks and ridges of the snow-powdered ice. Or he watches patiently by a blowhole in the ice, knowing that sooner or later a seal will rise to the surface to breathe. The moment its head appears above the water, out shoots a great white paw, and the little animal is stunned and scooped out of the water before it has even seen the cunning bear.

The Strange Diet of a Polar Bear

Living as they do so far north, polar bears hardly ever see a human being. When man does invade their "dim blue world," they are very much interested but are not the least afraid of the strange two-legged creature. If a ship appears in the polar seas a huge white bear is quite likely to swim out

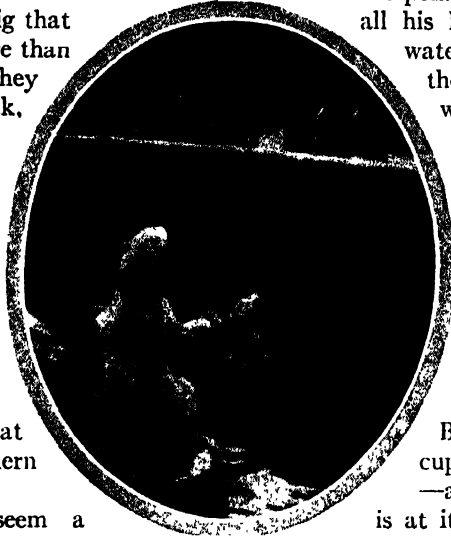


Photo by N. Y. Zoological Society

This group of polar bears in the New York zoo is begging for peanuts. They are very likely to get what they want, for their manner is most persuasive—and it does seem so little for such a big bear to ask!

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Photo by Field Museum

Most people think that polar bears love the deadly cold of their northern homes and are happy only when seated on a cake of ice! Anybody, however, who has seen the polar bears at the zoo during the hot weather knows that they are quite as fond of lying in the hot

to examine it, and if it is icebound he may try to climb on board to have a good look round.

Arctic explorers are often followed over the snowy tracts by inquisitive polar bears, who will march right into the middle of the camp and start smashing things up and devouring the stores. These bears will eat, or try to eat, the most extraordinary articles, such as boots, sacking, coils of rope, and mackintosh sheets. On one occasion a great hungry fellow actually bolted a large roll of sticking plaster. The bears are dangerous, too. They will kill the dogs belonging to exploring parties and sometimes even attack the men.

An Endless Quest for Food

The male polar bear is a restless animal. Even in the depths of the arctic winter he is constantly wandering about on his unending quest for food. He will take shelter under a rocky ledge or in a cave in the snow while

sun as many tropical animals are. Indeed they can stand a great deal of heat, for they are used to the intense radiation of the sunlight from the vast fields of white snow. Above are some polar bears about to enjoy a seal dinner. As usual, the baby eats first.

the fierce blizzards sweep over the desolate wastes, but as soon as there is a lull in the storm he is on the prowl again.

The she-bear is not so venturesome. She stays at home altogether during the worst months of the year, in a cave which she makes for herself by scraping a large hole in a snowdrift. The snow soon blocks the entrance to her cave, so she is quite snug and warm inside while the storms rage and the winds howl over the great white world outdoors. She goes into her cave alone, but when in the early spring she saunters out again, she usually has two, and sometimes three, tiny cubs trotting by her side. For in that cozy snow house, in the depth of winter, the bear cubs are born, and there they stay secure and warm until the snow door begins to melt and their mother thinks it time to take them out for their first walk.

Of course it is very cold still. It never is really warm in the arctic regions. But the cubs do not mind. They are sturdy little

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rascals, with thick fur coats of their own, and their mother takes the best possible care of them. She herself is very gaunt and thin at this time. She has had nothing to eat all winter long, and besides this she has been feeding her fat little cubs with her own milk.

Yet hungry as she must be, she gives the largest share of all the food she finds or kills to her greedy little ones.

She soon teaches the cubs how to get food for themselves—how to stalk the seals as they lie on the ice floes and how to strike down the sea birds that come in great companies to nest among the rocks in spring. And

to complete their education she encourages them to bathe and play in the icy water. If they are silly and refuse to go in, their mother cuffs and ducks the cubs to make them bolder; and she will sometimes tow a nervous young bear right out to sea while it clings desperately to her tail with its teeth. So she does her best to bring up her cubs in the way they should go. And she fights for them and protects them from all the dangers which surround little cubs in the wild, frozen north,

until they are old enough to leave her care and wander away by themselves.

Now bears have some small relatives in various parts of the world who, although they are not real bears, are like bears in certain particulars. They have five toes on each foot, and walk in a flat-footed, bearlike way; and they are quite as intelligent and quick-witted as the wise old bears.

These animals belong to the raccoon tribe, and include the pandas, 'coons, ring-tailed cats, coatis, and kinkajous. They are

funny little beasts with furry manes, and with one exception, they are all distinguished



Photo by N. Y. Zoological Society

The giant panda, which you see above, is an extremely rare animal found on the plateau of Tibet. It looks very much like a bear but is really a member of the raccoon family. People know very little about its habits.

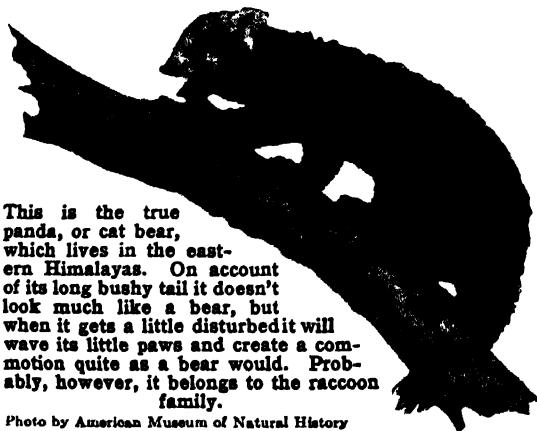
by having a fine bushy tail ringed round with alternate light and dark rings.

The odd member of the family is the great panda, an extraordinary-looking animal with a white woolly coat, black legs, a black stripe across its shoulders, and black rings round its eyes. It is as big as a small bear and has only a stump of a tail instead of a long, ringed one like the rest of its tribe.

The Great Panda of China

The great panda is a native of Northwest China. No one seems to know much about it, for it lives in dense jungles of shrubs and bamboos and very seldom shows itself. So far as we know, the queer animals lead a solitary kind of life feeding on roots and young bamboo shoots, and when the snow covers the ground it probably curls up in some sheltered spot and sleeps most of the winter away.

The true panda, or cat bear, as it is often called, is quite a different animal. It is a handsome little creature about the size of a fox and is dressed in a beautiful chestnut-red coat of soft silky fur. It has a splendid tail



This is the true panda, or cat bear, which lives in the eastern Himalayas. On account of its long bushy tail it doesn't look much like a bear, but when it gets a little disturbed it will wave its little paws and create a commotion quite as a bear would. Probably, however, it belongs to the raccoon family.

Photo by American Museum of Natural History

BRUIN THE BEAR AND HIS HOMELY LIFE

ringed with two shades of the same chestnut color, but its face is white with a dark red patch on each cheek. These patches give the little creature a decidedly odd look.

The panda lives high up among the mountains of the Himalayas and in Northwest China. It spends most of the day asleep in the branches of the trees on the mountain side, and comes down to prowl about and feed in the evening and early morning. It lives chiefly on fruit, roots, acorns, and bamboo shoots, though it is fond of eggs when it can find them, and the sly little creature will sometimes creep into the villages and steal butter and cream from the dairies when the natives are fast asleep in bed.

Pandas are gentle and friendly, and often become very tame. But if they are annoyed they hiss and spit like cats, and sometimes they give a deep, low growl like an angry little bear.

Raccoons are true Americans. They are found in wooded districts over almost the whole of North and Central America, and nowhere else. They do not care much for dense dry forests, but choose to make their homes in the canebrakes or among the trees

growing on the banks of lakes or streams. For raccoons are never happy far away from the water. They love to play and frolic in the shallows in the cool of the evening, to hunt for crayfish lurking beneath the stones, to dig out the mussels and clams from the mud, and catch the frogs hopping about in the damp grass down by the water's edge. They have a funny habit, too, of washing almost all their food before they eat it. Holding it firmly in their two front paws, the fastidious little animals souse their meat up and down in the water until it is thoroughly soaked before they proceed to enjoy it! Most people know what a 'coon is like, but not every one has a chance to see these funny little bear-like animals, with their humped-up backs and sharp, foxlike little faces, at home in their natural haunts. For raccoons are shy, and unless the weather is dark and cloudy are seldom out and about in the daytime. They sleep most of the day stretched flat along the bough of a tree. Sometimes they climb up to the top of a hemlock and coil their fat little bodies round the main stem. There they doze, supported by a network of fine branches gently swaying in the breeze.

Have you by any chance lost a hairbrush, a thimble, or a pair of scissors? If you are the proud owner of a pet raccoon you will know exactly where your lost article has gone. For raccoons are thieves by nature, though they do make delightful pets. This one has had no luck hunting on neighboring farms and so has stolen into the city to see what he can find in the garbage cans.

Photo by Ewing Galloway N. Y.



BRUIN THE BEAR AND HIS HOMELY LIFE

Like bears, raccoons do not mind much what they eat. They are ruthless little hunters. They kill roosting birds as they wander over the trees at night, and tear open squirrels' nests to get at the terrified little squirrels huddled together inside. They raid the cornfields and strip the ripe corn from the stems, and steal into poultry houses and kill the chickens. So

'coons are not at all beloved by farmers, and the poor beasts are often hunted with dogs on bright moonlight nights in the autumn.

Raccoons do not like cold weather, and as soon as winter sets in they put themselves to bed in a hollow tree where they are well sheltered from the snow and icy blasts. There father, mother, and five or six young 'coons may often be found all curled up together sound asleep. Sometimes, if the hole in the tree is big enough, two or three family parties may share the same winter quarters.

Not unlike its cousin the raccoon in its ways is the pretty little ring-tailed 'coon that lives among the rocks and trees in Mexico and the Southern United States. It is almost as small and slight as a weasel, and has a handsome yellowish-brown coat and a fine bushy tail ringed with black and white. Like the 'coon it is fond of the waterside, but so far as is known, does not seem to be in the habit of washing its food.

The coatis (*kô-ä'tê*) are curious little beasts with short legs, long bushy tails, and very big noses which they are always twitching and wriggling in the most ridiculous way. They live in the forests of Mexico and South America, and go about in little companies

of from ten to twenty, spending most of their time scampering about the trees and hunting together. They rifle birds' nests, eating both eggs and young birds, chase lizards, catch insects, and grub for worms in the ground with their funny long snouts. Sometimes a party of coatis will hunt the iguana—a giant lizard two or three feet long. Then the cunning little animals will divide into two packs, and while some chase the lizard through the trees, the others scamper along below ready to pounce on the creature the moment it falls to the ground after some unlucky misstep.

The common, or white-nosed, coati has a brown coat and a white snout. The red coati, which is found only in South America, has a ruddy coat, and its nose is not so pale in hue. But both animals have tails which are more or less ringed in

the style that marks the raccoon family.

Last but not least of these little

bearlike folk is the kinkajou (*kîng'ká-jôo*) a fascinating little animal that lives in the forests of Central and South America. It is about as big as a cat and has a round head, a snubby nose, and a pair of lovely dark bright eyes through which it peers at you in the daytime in a short-sighted way. But the kinkajou is seldom seen abroad until after the sun goes down. It hates strong light, for its fine eyes are very sensitive, and it will not open them if it can help it until nightfall.

The kinkajou is dressed in a beautifully soft fur coat of a pale yellowish-brown marked with faint bands of a slightly darker shade. Its fine bushy tail, which is as long as its head and body together, is no mere ornament, for the kinkajou can curl the tip of it round a slender bough and swing head downward—just like a spider monkey. When tired of this amusement the quaint little animal swings its head round, clutches its



Photos by N. Y. Zoological Society

At the top is a binturong from the forests of the Orient, where it lives among the trees and pounces upon small mammals for its dinner. In the center is an ordinary little American raccoon, and below him is one of his near relatives, the ring-tail raccoon, who is very much like him but more slenderly built. This little animal is easily tamed, and just as good a mouser as any kitten.

BRUIN THE BEAR AND HIS HOMELY LIFE



Photo by American Museum of Natural History

All these interesting animals live in Mexico. The pair at the left are kinkajous, accomplished little creatures that can swing by their tails. All the rest,

both young and old, are coatis, long-nosed, raccoon-like animals that like to live in trees, where they go about in parties of ten or twenty individuals.

tail with its two forepaws, and climbs nimbly up on the bough again. So far as we know, the kinkajou is the only animal that is clever enough to use its tail as a rope ladder!

Besides its serviceable tail the kinkajou has a remarkably useful tongue. It is extraordinarily long and flexible, and the little creature can wriggle it into cracks and holes in the bark of the trees, and flick out the insects hiding there. It can also lick the honey out of the wild bees' nests without first tearing them open with its claws, as a big bear does.

Like the rest of its family the kinkajou has a very accommodating appetite. It steals

young birds and eggs from nests, hunts wood mice and other small creatures, and is especially fond of fruit. It uses its forepaws like little hands, just as a monkey does. Sitting upright on its haunches it holds its food in one paw while it breaks off a piece with the other and stuffs it into its mouth.

As a rule the kinkajou is a quiet, well-behaved little animal. It likes to be left in peace and does not interfere with its neighbors. But it is no coward. It has sharp little claws, and will put up a good fight if it is attacked by coatis, wild cats, or any other savage animal that lives in American forests.

MAMMALS

Reading Unit No. 8

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MAMMALS THAT LIVE IN THE WATER

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

The arrival of male seals on the breeding islands, 4-327-29
The strange change in the legs of seals, 4-328
How baby seals learn to swim, 4-330

How bachelor seals were slaughtered for their furs, 4-331
Sea lions, 4-332
The walrus, 4-332-33
The huge sea elephants, 4-335

Things to Think About

How does a male seal establish his place on the beach?
What kinds of seals are killed for their furs?
What can sea lions be trained to do?

To what uses does a walrus put his tusks?
Why do Eskimos hunt the walrus?
Why do sea elephants often swallow pebbles?

Picture Hunt

How do fur seals maintain discipline in the family? 4-327
What kind of hands has a seal? 4-328, 330-31
Where are seals born? 4-329
Why can seals stay in icy water? 4-330

What kind of seal is trained to do tricks? 4-331
What is the difference between a seal and a sea lion? 4-332
Why is it very expensive to keep a walrus in a zoo? 4-335

Related Material

From which insect do we get imitation sealskin? 9-44

Are seals fish or mammals? Explain. 3-68-69

Leisure-time Activities

PROJECT NO. 1: Visit the zoo and become acquainted with the ways of the seals and sea lions. Try to get there at feeding time.

PROJECT NO. 2: Find in books and magazines pictures of seals and sea lions.

Summary Statement

Seals live in the water constantly, except when they breed. Then they establish rookeries where thousands of baby seals are born. The "bachelors" are too

young to breed. Their furs are in great demand, and thousands of the animals are killed annually

MAMMALS THAT LIVE IN THE WATER



of Natural History

There are times when a parent seal is tried past endurance by his offspring, and with one flip he will send a

child tumbling off the cake of ice. For discipline is good in this family of fur seals.

MAMMALS THAT LIVE IN THE WATER

Playing Baseball in a Circus or Diving for Fish among His Native Ice Cakes, the Seal Is a Most Clever and Interesting Fellow

IF WE sail away and away as far north as Bering Sea, which, as you know, separates arctic America from Russian Siberia, we shall come to a group of Alaskan islands called the Pribilof Islands, rising like misty shadows from the cold gray sea. You would hardly care to stay on them long. They are bleak, dreary places where the sea grumbles over stretches of pebbly beach and pounds on the wave-worn rocks, while inland are miles of treeless waste covered with sand dunes and low, rough scrub. It is nearly always cold and foggy on these islands, even in summer time, and when the arctic winter holds them in its icy grip it would be hard to imagine anything more depressing. There is scarcely a sign of life along the desolate beaches and no sound to be heard but the moaning of the wind and the booming cracking of ice on the margin of the frozen shore.

But when winter is fairly over and spring well on the way, the scene changes. The deserted beaches are no longer empty and

silent. They are covered for miles with a surging mass of summer visitors, all ramping round, fighting, bellowing, roaring—you never saw such a commotion, or heard such a din as there is!

These excited visitors are "sea bears"—the big fur seals of the northern seas. And strange to say they are all old bulls; there is not a lady seal, or a young one less than six years old, from one end of the camping ground to the other. They are fine fellows, these sea bears, from six to seven feet long, all as fat and sleek as can be, each one weighing well over six hundred pounds, while among the thousands skirmishing about on the beach there may be one or two even bigger still.

The first sea bears arrive on the islands early in May, and for the next two or three weeks fresh arrivals keep pouring in from the sea to add to the excitement and hubbub on the shore. The fur seals are now in splendid condition. Their coats are smooth

MAMMALS THAT LIVE IN THE WATER

and glossy, their eyes are bright, their teeth are gleaming, their long whiskers stand out stiffly on each side of their mouths. For eight or nine months they have been living in the sea, seldom showing so much as a flipper on dry land. All that time they have been feasting on fishes, squids, and cuttlefish, and are now so strong and well-fed that they feel fit for anything, and are ready to assert their rights and hold their own against all comers. So one after another they haul themselves out of the sea and proceed to stake out

a claim of their own on the beach.

Now the sea bears, although so swift and graceful in the water, look decidedly awkward when flopping about on the shore, for instead of feet they have four long, narrow flippers; and flippers, though excellent to swim with, are not very convenient for walking. The best a fur seal can do, when on dry land, is to shuffle along, rolling from side to side, with its hind flippers folded forward and tucked underneath its cumbersome, sluglike body. And when it is in a hurry it rocks along in the funniest possible way—half galloping, half jumping over the ground.

Soon the beach is crowded with sea bears all hunting about for the best places on which to establish themselves; and all day long terrific battles are being fought up and down the shore. No sooner has one big fellow taken up his position on a nice flat rocky

piece of ground than another one comes up and tries to turn him off it. After much roaring and feinting, heads darting out and back as quick as lightning, one of the seals

succeeds in gripping his rival by the throat. Then, locked together, the two angry animals plunge wildly about tearing at each other with their teeth, with hair flying in all directions, until one gives way and is beaten off the disputed ground! It is weeks before the quarrelsome things are all settled and sorted out, for every time a fresh batch

of sea bears arrives at the island the battles begin all over again. At last, however, all the favorite positions nearest the sea have been preëmpted and held by the strongest and largest sea bears, and the beaten warriors have to content themselves with a location further back on the beach.

But the excitement is not yet over. Now the lady seals begin to make their appearance, and as fast as they land they are surrounded by a crowd of fighting heroes, all doing their best to persuade the ladies to come and camp on their own particular reservation. The lady seals, who are much smaller than the bulls, are often very roughly treated, and the poor things are hauled about by the scruff of the neck from one place to another

before they are allowed to settle down in peace. "The more, the merrier" is evidently the motto of the big bull seals,



Photo by Herbert G. Ponting, from "The Great White South"

These explorers are getting acquainted with a Weddell seal, which they have found making himself quite comfortable upon the antarctic ice, where he likes to take a sun bath.



Photo by N. Y. Zoological Society

Dinner time at the zoo! This little seal just can't wait until his meal is properly set out for him, so he is standing on his hind flippers to reach the pail.

MAMMALS THAT LIVE IN THE WATER



Photo by American Museum of Natural History

There are hundreds of sealskin coats on this rocky beach of the Pribilof Islands, where the fur seals gather to bring up their families. And what a strange

and when each one has secured as many partners as possible for the season he keeps jealous guard over them and drives all visitors to his camp away.

Life in a Seal Rookery

In the meantime, while all this turmoil has been going on in the "rookeries"—as seals' camping grounds are rather strangely called—parties of younger sea bears are constantly arriving to spend their holidays on the islands, too. They take no part in all this fuss and confusion, but keep well out of the way of their elders, knowing they would only be bitten and bumped about if they attempted to intrude where they were not wanted.

The young seals, which are two, three, and four years old, are not at all interested in housekeeping, so they do not bother to look for house room on the beach, but lope off together in hundreds further inland. There they have a jolly free-and-easy time playing

little colony it is! The big males bellow—and fight—and the babies play about or take swimming lessons from their mothers. There is not a moment's peace.

with one another and galloping round among the sand dunes, while parties of these "bachelors," as the young seals are called, keep trooping down to the coast to swim and gambol in the water—as all holiday makers do. They do not fight, but their barking and blowing and whistling mingles with the roaring and bellowing that goes on in the rookeries from morning to night all up and down the shore. The din is deafening.

By and by yet another sound is added to the general clamor. This is a funny little bleating noise, which announces to anyone who may be interested that the seal population is increased by several thousands of tiny sea bears. Every mother seal in the rookery has one wee baby to nurse, and they are all very happy and contented together.

How Baby Seals Begin Life

But seal babies are very independent, and their parents do not believe in coddling them. When they are only a day or two old the

MAMMALS THAT LIVE IN THE WATER

mother seals leave their children to their own devices and go off to fish and refresh themselves in the sea. So all the babies play together on the seashore, roll over and over, splash in and out of the puddles, and keep falling suddenly asleep in little bunches all over the shingly beach. Then when a mother seal comes back from her outing, she goes hunting about for her baby. She pushes the seal cubs about and knocks them over right and left with her flippers until she finds her own offspring and hauls it back home again. All these squirming youngsters would look about alike to you and me, but it would be safe to say that no mother ever picks out the wrong baby.

How Baby Seals Learn to Swim

At first the baby sea bears do not attempt to swim in the great ocean. They are such fat little things with such very big heads that they cannot keep right end up in the water. If you have read the story of the white seal in Kipling's "Jungle Book," you will remember the song that "all mother seals sing to their "babies."

"You mustn't swim till you're six weeks old,
Or your head will be sunk by your heels;
And summer gales and killer whales are
Bad for baby seals.

Are bad for baby seals, dear rat,
As bad as bad can be;
But splash and grow strong and you
can't be wrong,
Child of the open sea!"

But the baby seals are eager to learn, and as soon as they are old enough their mothers give them swimming lessons. At first they are very clumsy. They splash and splutter and *will* keep standing on their heads in the water and waving their hind flippers in the air. But they are plucky little animals; they enjoy the fun of it all, and when they have been in the sea a time or two they find out how to keep their balance and use their tiny flippers properly, and are soon swimming in deep water and riding on the top of the big waves all by themselves. So the little seal cubs "splash and grow strong" and enjoy themselves until the days begin to grow shorter and colder. Then their jolly playtime, like all good things, comes to an end. Toward the end of October the sea bears begin to assemble on the shore in family parties, and one after another they say good-by to their summer islands and head out for the open sea.

The big bull

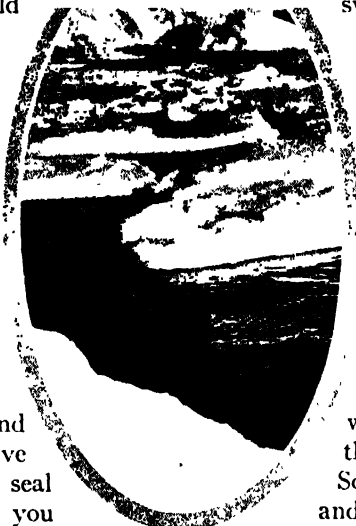
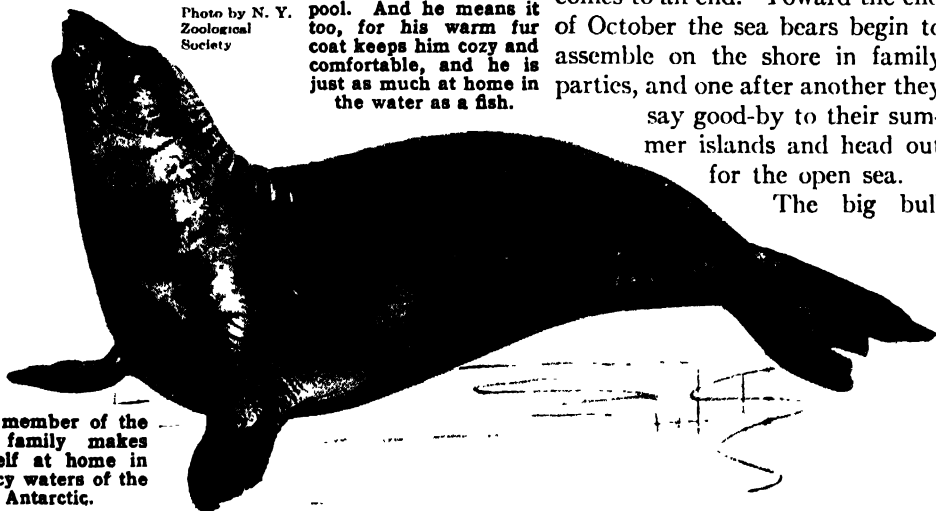


Photo by Herbert G. Pontil from the "Great White South"

"Come on in, the water's fine!" calls the little seal from his icy swimming pool. And he means it too, for his warm fur coat keeps him cozy and comfortable, and he is just as much at home in the water as a fish.

Photo by N. Y. Zoological Society



This member of the seal family makes himself at home in the icy waters of the Antarctic.

MAMMALS THAT LIVE IN THE WATER



Photo by N. Y. Zoological Society

Sea lions often pose in this majestic fashion. They are intelligent, and learn all kinds of tricks, although they can be quite perverse. One was shown how to

ring a bell, but could not be persuaded to try it. Then the disgusted trainer left the cage—and soon his pupil was ringing away delightedly.

seals are not nearly such fine-looking fellows now. They have been fighting hard, more or less, all the time they have been on the island, and have had nothing to eat since the day they hauled themselves up on the beach! How they manage to exist like that is a puzzle. But it does not seem to do them any real harm, and once they are back home in the deep sea they eat ravenously and soon grow fat and strong again.

By November the beaches are empty. The misty islands are quiet and lonely once again. The big bulls, the mother seals, and the babies are far out in the deep waters of the Pacific Ocean. There they will stay, swimming and feeding and even sleeping in the sea, lying comfortably on their backs with their flippers folded against their sides while the sea rocks them gently up and down. There, too, are many of the two-year-old, three-year-old, and four-year-old sea bears. But, alas, not nearly so many of the bachelors, who had such a jolly time on the islands, put out to sea with the rest of the seals as came ashore in the spring. This is the sad part of the story. Unfortunately for the poor beasts their skins are very valuable. Beneath

their dark hairy fur coats sea bears have an undercoat of very soft thick fur. This is the sealskin which is made into coats and wraps for ladies to wear. So in the summer time the happy islands are invaded by parties of seal hunters who round up the young fur seals, kill them, and then rip off the skins, which they send to the markets of the world.

At one time the sealers slaughtered the poor things so ruthlessly that the fur seals were in danger of becoming extinct. Now, one is glad to know, this is no longer allowed, and the animals are protected in some degree from such a sad fate. But every year a large number of young sea bears are killed when they are enjoying their summer holiday on the lonely islands in the Bering Sea.

Sea bears are carnivorous animals just as cats, dogs, bears, and weasels are, though since they spend most of their time in the sea and have flippers instead of feet they are called "fin-footed carnivores." The sea bears, sea lions, the walrus, and the true seals are all fin-footed animals and all closely related one to another.

Sea bears are most valuable because they

MAMMALS THAT LIVE IN THE WATER

are the "fur seals." Northern sea lions are very much like them, both in looks and in ways, but they have no soft, woolly, sealskin jackets under their hairy coats, so they are called "hair seals."

These sea lions are bigger than the sea bears—some grow to the enormous length of ten feet. They have handsome, dark, tawny coats and are altogether very fine fellows, with very loud voices. Their hoarse, bellowing roar can be heard very far away. Like the sea bears the sea lions spend the summer months and bring up their children on lonely islands in the North Pacific, as well as on desolate, rocky shores on the western coast of America. They make quite as much commotion and fight just as desperately for the best places in their rookeries as the sea bears do. So do the Californian sea lions, who assemble in the spring on the islands on the Pacific coast of the United States as far south as San Francisco. The Californian sea lion is not more than seven feet long, and has a dark ruddy-brown coat which turns gray in winter. Sometimes the big northern sea lion chooses the same islands for his summer home as his Californian cousin, but the two seals do not mix. They each have their separate rookeries, and apart from the difference in size, you can always tell which is which by the noise they make. The northern sea lion roars and bellows, while the Californian gives a loud, sharp bark when he wants to express his feelings.

Sea Lions in the South Seas

There are other sea lions along the coasts of Japan and the desolate uninhabited islets dotted about the Pacific Ocean—wherever it is not too hot. One fine fellow called the Patagonian, or southern, sea lion haunts the southern ocean as far as the cold antarctic regions, and is distinguished by having a splendid mane of crisp, curly hair on his

neck and shoulders. So he deserves the name of "sea lion" far more than most of his relatives do. You see this "lion" in his glory only when he is basking on the shore and his hair is absolutely dry; for directly he plunges into the water and wets his curly mane, it lies down quite flat.

Sea lions are surprisingly clever and intelligent. They are easily tamed and can be

trained to give astonishing entertainments—to climb up ladders, balance balls, lamps, and top hats on their noses, and do other ridiculous tricks of the kind. But this is too unnatural to be really enjoyable, so anyone who knows them thinks it is far more interesting to see the animals sporting in the water as they love to do.

In zoölogical parks sea lions grow quite attached to their keepers, and there they seem thoroughly to enjoy giving exhibitions of high diving and expert fish catching in the swimming pools provided for them.

All sea lions and sea bears have ears, though very small ones, but the rest of the fin-footed carnivorous folk—the walruses and true seals—have no external ears at all; they have only ear holes in the side of the head.

The walrus is one of the strangest-looking animals of the northern seas. You may know him by his swollen muzzle, which fairly bristles with bunches of stiff whiskers, and by the enormous pair of tusks which project downward from his upper jaw. A full-grown walrus measures from ten to twelve feet and is so heavy and bulky that it is as much as he can do to heave himself out of the water up on the ice floes where he loves to lie and doze. He would never be able to manage it if it were not for his long tusks, which he uses as grappling irons when he hoists his huge, lumbering carcass up on the ice or the rocks.

His tusks are useful to the strange beast in many ways. He uses them to dig up shell-fish from muddy creeks, to rake seaweed from

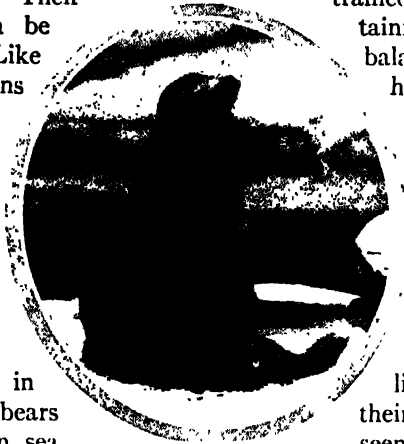


Photo by N. Y. Zoological Society

This little sea lion uses his front flippers to swim with, while the true seal uses his tail and holds his front flippers close to his sides.

MAMMALS THAT LIVE IN THE WATER



Photo by N. Y. Zoological Society

Our walrus looks as though she were extremely wise—and extremely bored! Or perhaps she is just wondering if you have the good sense to admire her

the rocks, and to defend himself against the polar bear or any other arctic creature that has the impudence to attack him. But in spite of his formidable weapons and his fierce air the walrus is not naturally a fighter; he only wants to be left in peace to enjoy life in his own queer way. He is much too lazy to hunt the swift fishes through the water, so he munches seaweed, grubs up clams and cockles, crushing their thick shells between his strong back teeth, and lolls about with his friends and relatives.

Walruses are sociable creatures, and go about in herds. Dozens of the strange animals lie about, all huddled up together with their heads resting on one another's backs like a lot of pigs. They spend most of the time peacefully snoring; but until they are all comfortably settled they roll and tumble about in a heap, probing and prodding each other with their tusks and making a horrible noise with their grunts and bellows. One or two of the party always keep guard while the herd reposes, and these sentinels are constantly waking their neighbors by digging them in the ribs. Then the bellowing and commotion begin all over again.

A female walrus has tusks as well as her mate, although they are not quite so long.

noble moustache. Her husband, as you probably know, has two fine tusks which he finds useful in digging for clams or holding his own with polar bears.

She is devoted to her ugly little cub, which she carries about on her back in the water while it is small. Sometimes she feeds the youngster until it is two years old and almost as big as she is herself. Even in its young days a walrus can never be called handsome, but in old age it is positively hideous. Its skin gets covered with wrinkles and its hair falls off in patches until the creature is nearly bald all over. It is a valuable beast, however, particularly to the Eskimos, who hunt it on the ice with guns or long lances, and in the sea with harpoons. Its flesh and its oil they use for food; its tusks, they make into fishhooks; and its leathery hide they make into harness, tiller ropes, and soles for boots.

Very different from the clumsy, blundering walruses are the true seal folk of the northern oceans. Of all the fin-footed tribes who make their homes in the restless seas the seals are most perfectly adapted to that life. To begin with, they are fish-shaped; that is, they are broad across the shoulders and taper gradually to the tail. Their front flippers are broad and flat and act as side fins, while the hind flippers are turned backward and, when the seal is swimming, are held close together to form a rudder, or tail fin.

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A seal can swim like a fish and dive like a fish. It closes its nostrils as well as its mouth when under water, and can stay below for a quarter of an hour or twenty minutes, if it wants to, without coming to the surface to breathe. It spends most of its days cruising about in its ocean home, where it chases the fishes and overtakes them with great ease.

When a Seal Goes Out for a Walk

Yet seals do come out of the water sometimes. They love to bask in the sun on the rocks or on the shore close to the edge of the sea, ready to plunge into the water if anything frightens them. On land they cannot move so well or so quickly as sea bears and sea lions can. You see, their hind flippers are fastened on backward, so they trail behind along the ground when a seal takes a walk upon the shore, and the animal can only wriggle and jerk and flounder along in a most uncomfortable fashion. When the ground is covered with snow the seal moves more easily, and it can slip and slide quite fast over smooth, slippery ice.

Seals are friendly creatures. They like company and usually go about in herds together, especially in the spring and early summer when the baby seals are born. When they first make their appearance in the world the young seals are all dressed alike in white woolly coats. And until they shed their baby clothes and really look like little seals they do not attempt to go into the water. They too have to be taught to swim, just like the young sea bears and lions. Some young seals, like human children, are frightened by the big waves; they do nothing but bleat and sputter and try to scramble back on the shore. Then the mother seals do all they can to coax the silly little things into the sea and even slap them with their flippers if the babies will not try to learn.

The Gentle Seals Along Our Coasts

The seal we are most likely to see about our coasts is the common seal, or harbor seal, as it is often called. It is about four feet long and has a yellowish-gray coat with a few black spots dotted over it here and there. It is a gentle creature with an almost human expression, and looks at you with its large,

mild eyes as if it were quite sure you would not hurt it.

Seals seem strange animals to keep as pets, but they soon grow remarkably tame and love dearly the people who understand them and know how to treat them properly. A fisherman once took a little seal cub home when it was only a few weeks old. It seemed quite happy and contented with its human friends. It played with the children and seemed to enjoy lying by the kitchen fire quite as much as basking in the sun. As it grew bigger, the feeding of it became quite a problem. So the fisherman put it in a boat, rowed a couple of miles out to sea, and dropped his pet overboard.

Of course he thought the seal would be delighted to find itself at liberty in its natural home. But not at all! It was dreadfully upset at being left all alone in the deep sea. And it swam after the boat, crying so pitifully—and seals really do cry—that its master had not the heart to leave it behind. So he took the seal aboard again and rowed it back home!

Homes of the Seal

The common seal wanders about both in the North Pacific and North Atlantic Oceans. It occasionally visits the English coasts, and is quite at home among the northern Scottish islands. Sometimes it turns up as far south as the Mediterranean. In North America it is well known on the northern coasts, where it travels as far south as New England and the middle states. Seals may often be seen playing about the harbor mouths and sometimes make quite long excursions up the rivers, chasing the fish in quiet streams that wind their way far from the sound of the sea.

The Greenland seal and the ringed seal are natives of the Arctic Sea, where they spend the worst part of the winter under the ice. They make breathing holes in the ice and pop up at intervals to take a supply of fresh air into their lungs. And there the gentle seals often meet their fate; for by these holes the Eskimo waits for hours with his harpoon, and there, too, their old enemy the polar bear watches patiently to scoop them out of the water the moment they show their noses.

In the North Atlantic live other seals,

MAMMALS THAT LIVE IN THE WATER



Photo by British Museum

This expressive face belongs to the bull walrus. He has a sociable disposition and a tremendous appetite.

too—the big “gray seal” that may be eight or nine feet long and is much fiercer than most of his tribe; the bearded seal, which is almost as large and has a funny habit of turning a complete somersault when it dives from a rocky ledge into the water; and the peculiar crested seal, or hooded seal, that is remarkable for having over its nostrils a large bag of loose skin which it blows out with air until the contrivance covers its head, like a hood.

In the antarctic seas there is the leopard seal, a rare and handsome creature with a spotted coat and a catlike face.* It is a huge fellow some twelve feet long, and spends most of the day basking on the ice and catching fish and shrimplike creatures that abound in the cold waters. Occasionally it bags a penguin or two.

Largest of all the earless seals, and indeed largest of all the fin-footed tribe, are the curious sea elephants. There are two of them, one in the northern and one in the southern seas. They are called sea elephants partly on account of their size—for they often measure twenty feet or more from their noses to

A two-year-old walrus that lived in the zoo weighed 320 lbs. and ate 70 lbs. of fish a day.

the end of their tail flippers—and partly because their noses are so long as to look like absurd little trunks.

Although they are so large sea elephants are rather lazy beasts and not especially quarrelsome except when they are choosing their mates, an exciting event which takes place once a year. Then the old bulls are exceedingly fierce. They fight together furiously, inflicting fearful wounds on one another with their great tusklike teeth, which are so strong that the sea elephants can crack pebbles with them as easily as you could crack a peanut.

Sea elephants swallow a good many pebbles in the course of their lives, a habit that is shared by nearly all the members of the fin-footed tribe. But whether the pebbles are swallowed by accident or as an aid to digestion does not seem quite clear. That is one of the most interesting things about the study of animals—there is a great deal still to be found out about them, and anyone who has the patience to observe them carefully can help discover it. There are few sports more interesting.

MAMMALS

Reading Unit No. 9

THE GIANTS OF THE FOUR-FOOTED WORLD

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

How an elephant is made, 4-337-38
The differences between African and Indian elephants, 4-340-41
Elephants at work and in the jungle, 4-341-43
Elephants that roamed America, 4-344

Hyraxes, tiny relatives of the elephant, 4-345
The rhinoceros and its way of living, 4-345-48
Tapirs, 4-348-50
Wild horses, donkeys, and zebras, 4-350-52

Things to Think About

How is the trunk of an elephant used?
What has been learned about the life of a wild elephant?
How do rhinoceroses make up for their poor eyesight?

What changes produced the modern horse from its tiny ancestor?
In what way do the zebra's stripes often save its life?

Related Material

How is ivory used? 11-15, 80
How well acquainted with elephants were ancient cave men?

11-3
Did the elephant always have a trunk? 3-54

Leisure-time Activities

PROJECT NO. 1: Visit the zoo and observe the characteristics of the four-footed animals mentioned in this chapter.
PROJECT NO. 2: Visit a museum of art and examine ivory carvings, 11-15, 80

PROJECT NO. 3: Visit a museum of natural history and study mastodon remains, 4-344. Or find in books or magazines interesting pictures of the animals mentioned in this unit.

Summary Statement

Elephants always attract attention because of their immense size, intelligence, and strength. The ancient horse was once no

bigger than a hare and had five toes, but the horse of to-day is quite a different animal.

THE GIANTS OF THE FOUR-FOOTED WORLD

African elephants often move about in large herds, munching twigs and leaves and digging up soft roots with their tusks. It is said that grown-up elephants go to sleep standing up; in fact they seldom lie down at all, except to roll in the mud or sand. Perhaps it is because, like the knights of old who wore such amazingly heavy armor, they have a hard time getting up, once they are down!



Photo by American Museum of Natural History

The GIANTS of the FOUR-FOOTED WORLD

Is There Anything More Comical than an Elephant, or More Gentle and Friendly, or Wiser?

IF THE animals were to meet together to decide who among them should be king, there would probably be several candidates for the honor. The apes would declare that they were the most intelligent, and quarrel among themselves as to which was the cleverest of them all. The lion and the tiger would also lay claim to the title, each insisting that he was the strongest and most feared of the bold beasts of prey, while the elephant might, perhaps, boast that for size he came first in the animal world. The elephant would be wrong about that, because the gigantic blue-fin whale is the largest of all living animals. But since an elephant is never likely to meet a whale, he could hardly be expected to know this; he only knows that he is the largest animal that treads the earth. And what a tread it is! When an elephant puts his foot down there is not much left of anything that happens to be underneath it. His feet are like great cushions, for his toes are all inclosed in a thick fold of skin, with only the broad, flat nails showing outside. This tells us that the elephant is a "hoofed

animal"—one of the many four-legged creatures that have hoofs in place of ordinary feet.

There are several things about an elephant however, that distinguish him from other hoofed animals, and put him in a class by himself. To support his heavy weight his legs are like four straight, solid columns. The hind pair are not bent at the knee joint like the legs of most quadrupeds, and when he kneels his forefeet are stretched out in front and his hind feet behind.

Then in his upper jaw the elephant has a pair of enormous tusks. They are really his front teeth, which go on growing as long as he lives. Of course such teeth as these are no good to bite with. The African elephant uses them chiefly to dig roots out of the ground. He is a most industrious digger, and since he nearly always uses his right tusk for the job, it gets worn down and is usually shorter than the left one.

Apart from his tusks the elephant has no other teeth in the front of his mouth, but at the back are some broad flat grinders with

THE GIANTS OF THE FOUR-FOOTED WORLD

which he crushes his food. These grinding teeth keep working forward in the elephant's jaws and are gradually worn away by all the work they have to do. At last they fall out and their place is taken by new teeth which have been pushing their way up behind the old ones—so an elephant is always cutting his back teeth all his life long.

The Longest Nose in the World

But the most peculiar thing about an elephant is his trunk. It is not simply an absurdly long nose, as some people imagine; it is the animal's nose and upper lip combined. It is hard to see what an elephant would do without that trunk of his. He would probably starve, for his neck is so short and thick that he could not bend his head down to graze or to drink; and if he tried to crop the herbage on a level with his mouth, his huge projecting tusks would be very much in the way. But with his trunk

to help him, the elephant gets over all these difficulties without any trouble at all. It acts as a long arm with which he can pick up things from the ground without stooping or reach up to pick a bunch of leaves growing high above his head. Besides this, the trunk acts as a pump or flexible sucking tube for drawing up water for drinking; or it can be used as a spray to squirt the water over the animal's back

when he wishes to enjoy a shower bath. So strong is this wonderful trunk that the elephant can coil it round a full-grown man and lift him high into the air.

Yet it is so sensitive that he can pluck a single blade of grass with its fingerlike tip. The tip of the trunk is nose, lip, and finger as well, for the animal smells and feels everything with it.

There are certain things, however, that an elephant never does with his trunk. He never fights with it, and never uses it to haul heavy weights about. An elephant fights with his tusks and his hoofs; and he will haul a heavy load of timber by taking the rope between his teeth. A single log, if not too long, he will carry on his tusks or in his mouth, as a dog carries a stick. He will use his great head to shift a load which has stuck in the mud, or to push over a small tree that is in his way. But when he is working or fighting, the elephant always coils his trunk out of harm's way to keep it from being injured.

A baby elephant at first has a coat of long hair covering its plump little body, but this

★ The African elephant is much more savage than his Indian cousin. When he is aroused he will spread his great flapping ears and charge at his enemy with a loud trumpeting that must send a chill down the spines of the most hardened fighters. Below, you see two African elephants settling their differences at the point of the tusk.

wears off as the infant grows and for the rest of its life it has only its skin to protect it. But an elephant's skin is so thick and strong that it is quite as good as a leather coat. On the animal's broad back it is often as much as four or five inches thick, and the

whole leathery hide may weigh over a ton. There is one disadvantage in a coat like this; if it gets too dry it is likely to be stiff and uncomfortable.

So wild elephants seize every opportunity of bathing in the forest pools and streams or of



Photo by the Field Museum

THE GIANTS OF THE FOUR-FOOTED WORLD



Photo by N. Y. Zoological Society

You can always tell an African elephant by his wrinkled trunk and enormous ears. If these great beasts were trained to work as their Indian relatives have been for centuries, they would probably be very useful helpers to man; for they are said to have been easily trained

for war service by both the Romans and the Carthaginians in ancient times. It was no doubt great fellows like this one that went with Hannibal on his wintry march over the Alps and caused such a panic among the amazed tribes of Italy.

THE GIANTS OF THE FOUR-FOOTED WORLD



Photo by N. Y. Zoological Society

Elephants are usually among the best-behaved citizens of the zoo. Sometimes, however, if they become un-

ruly or need a tooth filled or an ear cleaned, they have to be reasoned with in the manner shown above!

rolling in the mud to keep their skins comfortably moist and prevent insects from pestering them. For there are billions of stinging, biting insects in the African forests and Indian jungles where elephants live, and the great beasts often suffer acutely from the little pests.

The African elephant and the Indian elephant are not quite alike in every particular. The African elephant is the larger of the two. An old tusker may be eleven or twelve feet high at the shoulder and carry a pair of solid ivory tusks seven or eight feet long. But one does not often meet with quite such a giant as that; ten feet, or a little over, is a good average height for a full-grown bull. An African elephant has a rather broad, low forehead and an enormous pair of flapping ears that hang over his shoulders and almost meet at the back of his head, while his trunk looks somewhat wrinkled and has two lips of equal size at the tip.

An Indian elephant is seldom more than

nine feet at the shoulder and has a higher forehead, smaller ears, and a smooth trunk with a big, fingerlike upper lip and quite a short lower one.

Besides these two well-known giants of the wild a race of pigmy elephants has been discovered living in the African forests. They are exactly like their huge relatives, but are no bigger than ponies. For a long time travelers and hunters thought these little beasts were baby ele-

phants, but now and then, when one of them was captured, it was found that, like Peter Pan, it never grew up. The dwarf elephants are very intelligent. One little fellow named "Congo" that lived in the New York Zoological Park was said by his keeper to be the wisest animal the man had ever known. Congo found

out how to open and shut the door of his house by slipping the ring on the end of a right-hand or left-hand chain over his tusk and pulling it, so that he could walk out in his inclosure or shut himself up indoors

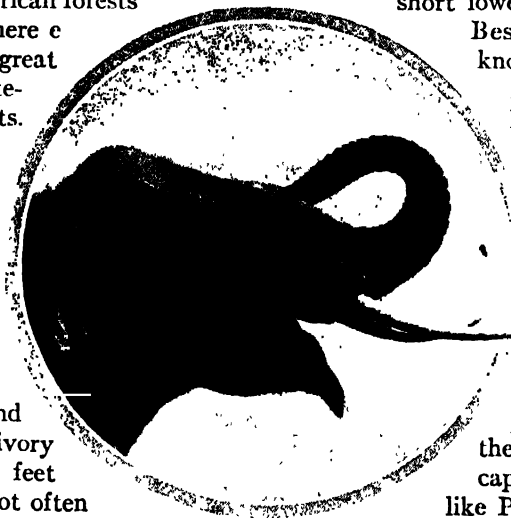


Photo by N. Y. Zoological Society

Here is the royal animal of India, who has worked so hard and fought so well for his country. Whether he is lugging heavy stones, marching in procession with an Eastern potentate seated in state on a jeweled throne upon his back, or performing tricks to delight a circus audience, he is always the same obedient and stately fellow.

THE GIANTS OF THE FOUR-FOOTED WORLD

just as he pleased. He learned to take coins from visitors, put them in a box, and ring a bell by pulling at a cord—once for every coin he popped in. And he had many other clever tricks besides.

Trained Elephants of India

The Indian elephants are more intelligent than their African cousins. For ages past they have been employed to carry native princes in the state processions. They are used, too, for transporting heavy baggage over rough, difficult country, and are trained to haul timber and pile up logs one upon another. All this work they do most methodically and exactly. They are very obedient to the Indian mahouts (mā-hout'), or drivers, who have charge of them, but an elephant must always be treated politely. If a man is rough or unjust to his charge the elephant never forgets it, and sooner or later he will pay the man back for the unkindness. As a rule, however, the mahouts are very fond of their elephants, and man and beast seem to understand and respect each other.

That such huge, powerful beasts should be so teachable and obedient is wonderful enough, but what makes it doubly so is that, with a very few exceptions, all tame elephants once lived a free, wild life in the jungles, and were not born in captivity. They were born in the wild and until they were rounded up and captured by the Indian elephant hunters they probably never saw a man. Yet the wildest elephant, as soon as his first terror is over, grows tame and tractable in a surprisingly short time. He is placed with one or two steady old fellows who calm him down and take a large share

in directing their new chum's education.

Herd of from twenty to fifty elephants of all ages roam about together through the dense Indian jungles and over the wooded hills, and all the elephants in the party belong as a rule to the same family. First there are old grandfather elephants, perhaps seventy or even a hundred years old—for these giants of the animal world live for a very long time if no accident befalls them. Then there are young tuskers, very bold and proud of their fine tusks; sedate mothers, who have no tusks; and trotting by their sides, the tiny calves no bigger than pigs. The rest of the herd consists of half-grown elephants of both sexes. The procession is usually headed by a trusty old female. She is followed by the other she-elephants with their little ones, and the old tuskers form a guard in the rear.

The Greatest Sight of the Jungle

These herds wander about by night and by day, feeding on the green leaves, young bamboo shoots, and wild fruits they find on the way. They march in regular order, almost treading in one another's footsteps, and huge creatures as they are, they thread their way almost noiselessly through the tangled forests and jungles. In the hottest hours of the day the herds rest quietly in the

Nature did not do a very good job of tailoring when she came to the elephants, for she gave them very wrinkly, ill-fitting suits. And if it comes to style, there is nothing very neat and trim about the African elephant's ears!

cool shade of a forest glade, for the Indian elephants dislike great heat and the full glare of the noonday sun. But they are never quite still, for elephants are exceedingly restless

creatures. They rock gently backward and forward, flap their ears, stamp one foot, then another, wave their trunks, and flick

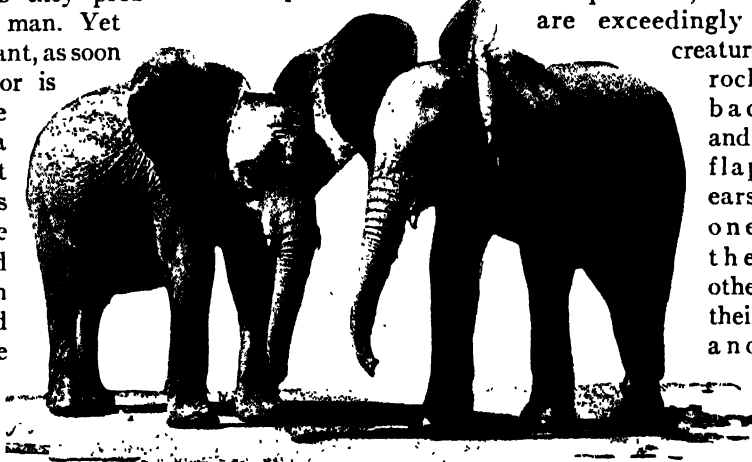


Photo by N. Y. Zoological Society

THE GIANTS OF THE FOUR-FOOTED WORLD

their wispy tails even when they appear to be dozing; the baby calves keep trotting round in and out between the legs and under the bodies of the big elephants, who are such good-tempered old things that they never seem to be annoyed by it and are careful not to stamp on one of the little chaps.

Sometimes they spend their hours of rest standing knee-deep in a shaded pool, where they refresh themselves by squirting water over their backs, while the tiny ones paddle in the shallow water at the edge of the pool. All elephants are fond of bathing; they swim well, too, and occasionally take long journeys up the rivers, swimming very low in the water, with only their heads or just the tips of their trunks above the surface.

The Elephant's Worst Enemy

About three o'clock, when the sun is not quite so hot, the elephants begin their march again. They roam about until nearly midnight and then take another rest until just before sunrise. Some lie down on the grass, others go to sleep standing up shoulder to shoulder, always gently rocking on their enormous feet.

Of course the elephants have many adventures. Huge and strong as they are, they must always be on the alert for danger, like all other creatures of the wild. The tiger is

This is not a baby elephant, as you might suppose. It is an African pigmy elephant from the dense jungles of the Congo. The natives call him the "swimming elephant," and no doubt he does spend a great deal of his time bathing in the rivers, for elephants are very fond of the water.

their chief enemy, though he seldom dares to attack a full-grown tusker. He will attack a young elephant occasionally or spring upon one of the baby calves that has foolishly strayed too far from the herd. But when a tiger or leopard kills or injures a little calf, he may have its mother to reckon with. If she is anywhere near, and she is seldom very far off, she will dash to the rescue of her young one, and in her rage and despair she frequently tramples the great cat to death with her enormous heavy hoofs.

When an Old Tusker Turns Savage

Yet as a rule, elephants are very peaceful and even rather timid. Unless roused to wrath they seldom interfere with other forest dwellers. Indeed, except for the great cats or a big bull buffalo, there are few creatures bold enough to annoy the giants of the jungle. Occasionally, however, an old tusker will turn surly and savage and break away from his herd. Whether he goes off on his own account or is turned out because his fellows will not put up with his outrageous behavior, we do not know. Anyhow, away he goes and stampedes about the country by himself, trumpeting defiance at one and all, and charging everything and everybody he happens to dislike. An elephant that goes mad in this way is called a "rogue," and is a most dangerous animal. He will dash out of the

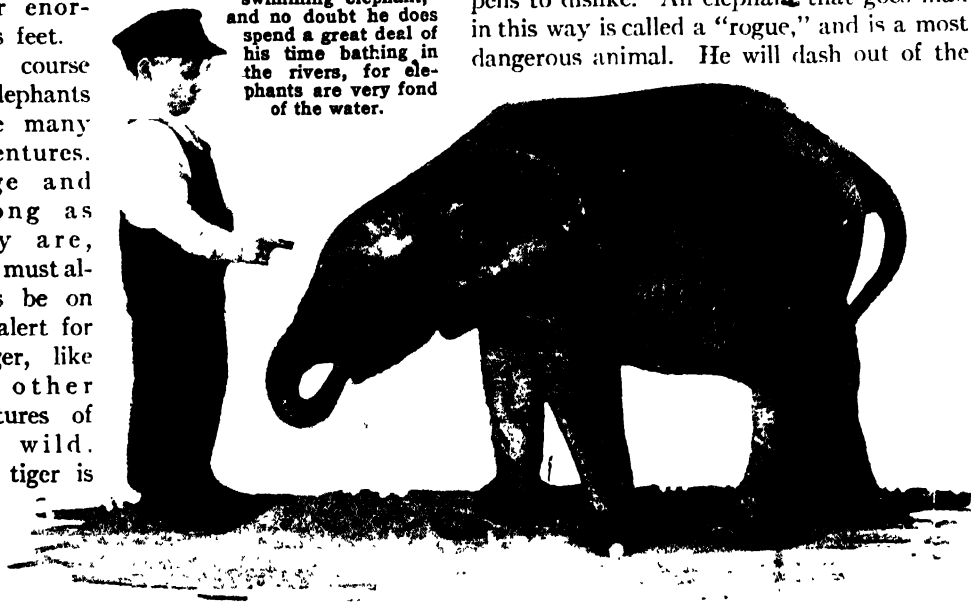


Photo by N. Y. Zoological Society

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Photo by Government of India Information Services

Perhaps this newly-captured Indian elephant will be trained to carry great loads at the command of a ma-

hout, or keeper. Or he may be sent to a circus where he'll learn with great patience to dance and do tricks.

jungle and tear madly through a village, scattering everybody to right and left and smashing the huts of the natives.

A rogue elephant once actually stopped a train that was traveling at the rate of thirty-four miles an hour. Hearing the whistle of the engine the mad fellow answered what he thought was a challenge by trumpeting loudly and charging the locomotive full tilt. He met the engine head on, and although the foolish beast was killed by the shock, he succeeded in mashing in the front part of the engine and partly derailing it. The only thing to do with a mad animal like this is to shoot it at sight; but except in the case of a "rogue" no one is allowed to kill an elephant in India; the beasts are too useful.

African elephants live in much the same way as their Indian cousins. They are always on the move, traveling in a circuit through

immense tracts of wild country, so that after wandering about for several years they come back to the place they set out from.

When on the march these elephant herds do a great deal of damage to the mimosa forests they pass through. Mimosa trees grow to be about twenty feet high and are very lightly rooted in the soil. So if the elephants cannot push the trees over with their heads, they just dig them up by driving their great tusks—like so many crow-bars—underneath the trunks. Then they strip the bark from the branches with their tusks, and eat bark, leaves, roots, and all.

African elephants are not so easily tamed as Indian elephants, and are not considered so intelligent. They are alto-

gether fiercer and more active animals. They march over steep, rocky tracts of country and never seem to tire, and although



Photo by N. Y. Zoological Society

Here is an Indian elephant—just as intelligent and patient as he looks! He often grows as much attached to his master as a dog would be, and will perform any task that he knows how to do.

THE GIANTS OF THE FOUR-FOOTED WORLD



Painted by Chas. R. Knight Photo Courtesy Field Museum

Ages ago this great mastodon made his home in North America. From his bones, left in various deposits, we can tell how he looked. In Northern Siberia lived one of his relatives, the woolly mammoth. Many of those ancient animals have been found intact—bones, flesh,

they like to retire to the shade of the forests during the hottest part of the day, some will stay out in the open under the blazing heat of the noonday sun without showing any signs of distress.

The Ill-tempered Giants of Africa

Although they are harmless enough, as a rule, when there is nothing to upset them, African elephants quickly lose their tempers; and it is no light thing to rouse the anger of one of these fierce giants. With a loud trumpeting roar he will charge straight at his enemy, his big, flapping ears raised and standing out like sails at each side of his head. No wonder the "master of the jungle" is treated with respect by all the inhabitants of the animal world!

African elephants are not captured and trained to work, but they are captured for

skin, and even hair—for Nature has kept them in cold storage for uncounted years, frozen in the underground ice or surrounded by icy sediment. It is said that the natives of the region have been found feeding mammoth flesh to their dogs, with no ill effects!

the sake of their valuable ivory tusks. Both males and females have tusks, and in some parts of Africa so many of these splendid beasts have been killed off that at one time it was feared they might become extinct. Happily the danger is over, for the present at any rate, for people are no longer allowed to slaughter them in such a terrible way.

Although there are now no elephants in America, the huge mastodon (mās'tō-dŏn), the ancestor of the jungle giants of to-day, must once have roamed about the country and struck terror to the hearts of the wild men who lived in bygone ages, for the bones of these ancient monsters have been dug up in North America as well as in many other parts of the world.

Skipping about on the rocks in many parts of Africa we may often see some lively little animals that we might easily mistake for

THE GIANTS OF THE FOUR-FOOTED WORLD

rodents, for they are about the size of a rabbit and look somewhat like large guinea pigs. But we should be wrong. The funny little furry creatures do not belong to the chisel-toothed tribes, although they have long, rabbitlike front teeth. They are really hoofed animals. Their nearest relatives—though you would never guess it—are the big, dignified elephants. These little creatures are called hyraxes, rock rabbits, or conies (kō'nī).

Hyraxes are most interesting animals. Although they do not precisely have hoofs, their toes, as far as the nails, are joined together by skin—much as the toes of the elephant and the rhinoceros are. They live among the rocks or in trees in Arabia and Syria, as well as in Africa, and they whisk in and out of their holes or scamper up and down tall forest trees as quickly and lightly as squirrels. Whenever anything startles them they give funny, shrill squeaks of alarm.

The mother hyrax nearly always has three babies at a time. She carries them all on her back till they are about as big as rats. There they cling tightly to her thick fur as she skips about. They are very playful little things, and as soon as they can trot around on their

own little sprawling feet, they chase one another in and out of the holes in the rocks and gambol together like kittens.

These little animals are the "conies" we read about in the Old Testament, where they are spoken of as "a feeble folk" though "exceeding wise." Perhaps you know the verse in the Psalms: "The high hills are a refuge for the wild goats and the rocks for the conies."

After the elephant, the rhinoceros and hippopotamus are rivals for the next place among the giants in the animal world. The "hippo" is the heavier, bulkier animal, but the "rhino" is the taller of the two; so there is little

to choose between them.

The white rhinoceros, the largest of its kind, stands six or seven feet high at the shoulder. It is a dirty gray color—not white, and no amount of scrubbing could make it so. Its hide is so thick and tough it is as good as a suit of armor, and apart from a slight fringe of hair on its ears and a tuft at the end of its tail, its skin is as bare as an elephant's.

No one could call the rhinoceros handsome. It looks like some prehistoric beast with its boiler-shaped body, thick stumpy legs, queerly shaped head, vicious little eyes, and the

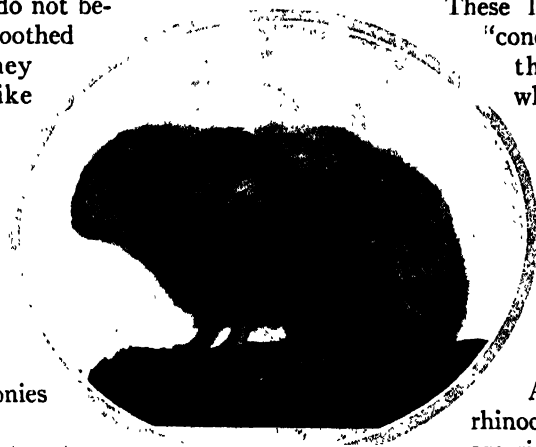


Photo by American Museum of Natural History
This tiny mammal is a near relative of the elephant and the rhinoceros, although it is hard at first glance to see how that can be. He is called a hyrax, or cony, and he lives in rocky places in certain parts of Africa and Syria.

Here is our old friend of the zoo, the Indian rhinoceros. Of the land animals of the East he is next to the elephant in size, but he hasn't half the elephant's intelligence.

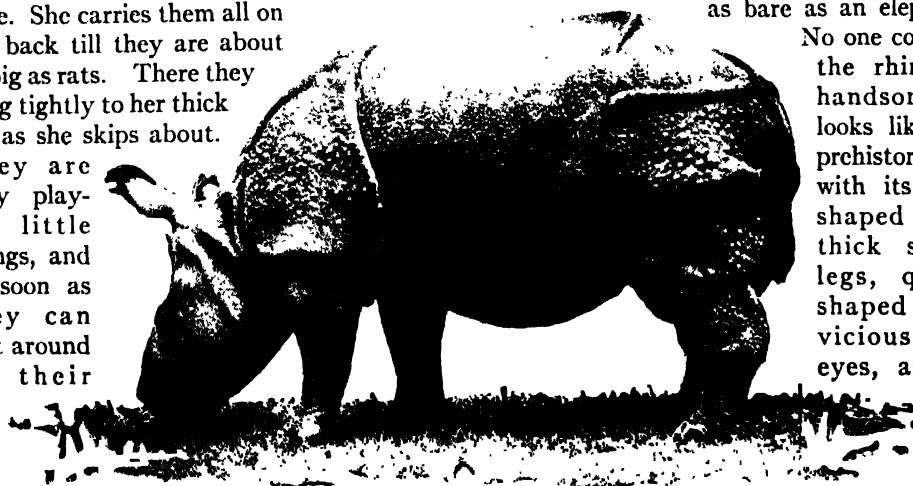


Photo by N. Y. Zoological Society

THE GIANTS OF THE FOUR-FOOTED WORLD

fearsome-looking, sharply-pointed horn, or horns, sticking up on the top of its wrinkly nose. It is from this peculiar horn that the animal takes its name, for the word "rhinoceros" actually means "horned-nose."

This nose horn is quite unlike the horns of a deer or a buffalo.

It is not formed of bone, but composed of a solid mass of hairs, all matted and glued together. The horn is not fixed to the animal's skull, but merely attached to the skin on its head, and could be sliced off its nose with a very sharp knife.

The white African rhino has two or three horns, one behind the other. The front one, which stands upright with the sharp point curving slightly backward, is a most terrible weapon, often three feet long. The second horn, as a rule, is not more than half that length, though occasionally one may meet a rhinoceros with both horns of the same size.

In spite of his size and his formidable horn, the white rhinoceros is not an especially savage animal. In fact, he is rather timid. He is quick to hear the slightest sound and has very keen scent, but he is extremely short-sighted and always walks with his great square muzzle to the ground, as if he were looking for something he had lost. He is often accompanied on his rambles by a flock of birds, called rhinoceros birds, that flutter round his head and perch on his back as he marches slowly along or lies down to rest in the shade. Old rhinoceros does not object to his followers; in fact he rather likes their company. The birds pick off the irritating insects and ticks that worry the poor beast by creeping into the creases in his skin; and

by flapping their wings and screeching if anything disturbs them they warn him of the approach of danger. Old rhino seldom waits to find out what is the matter. With a snort of disgust he makes off at a canter and disappears among the trees or bushes.



Photos by N. Y. Zoological Society

It would be hard to find a member of the animal kingdom more hideous than the rhinoceros. One might almost imagine that Mother Nature felt sorry for him and made him near-sighted so that he might live in blissful ignorance of his ugliness! At the top is a "rhino" from India, and below him is his African relative.

Still it does not do to trust to the timid nature of the lumbering giant, for one can never be quite sure what a rhinoceros will do. He may flee at the first alarm, or, on the other hand, he may make a sudden and surprisingly swift rush at his enemy --and the wild charge of an angry rhino not even an elephant can withstand. So on the whole it is wiser to be discreet. The famous rhyme,

"If ever you meet a rhinoceros
Do not linger but flee
Up the very next tree"—

may not be good poetry, but it is sound advice. Yet even thus you might not be safe, for unless the tree is very stout and strong the infuriated animal may break it down by crashing into it with all the force of his two or three tons.

The Lonely Life of a Rhino

Rhinoceroses are rather solitary animals. Two or three sometimes go about together for a time, but the white rhinoceros usually walks alone. Occasionally a mother rhino may be seen taking her little one out for a walk. On these promenades the queer little calf trots in front while its anxious parent follows behind and guides the footsteps of the child with her long nose horn. But even rhinoceroses have their own ideas about the education of their young, and when a black

THE GIANTS OF THE FOUR-FOOTED WORLD

rhinoceros goes walking with her baby, she always marches ahead, instead of behind, and expects the little thing to run after her.

The black rhinoceros is no more black than the white one is white. In fact both these animals are much the same dingy gray, though the black one may be slightly the darker of the two. The black rhino, which also has two fine nose horns, is seen much more often in Africa than the white one, which unfortunately is growing very rare. The black one is not so big, but is more alert and courageous. He marches with his head held high in the air, as if ready to defy the whole of the animal world. But he is really not so savage as he looks and is generally supposed to be; if people leave him alone he seldom attacks them, though when he is annoyed he is a very dangerous beast to encounter.

Like all his kind the black rhino has very poor sight, and is obliged to trust to his quick ears and his keen sense of smell to warn him of danger. This makes him very inquisitive. He will gallop up to anything that excites his suspicion and peer at it fixedly with his small, short-sighted eyes. Then if the object doesn't interest him, old rhino gives a snort, whisks round, and pounds away with his wisp of a tail screwed up over his back.

Haunts of the Rhino

Rhinoceroses are not so fond of the dense forests as the elephants are. They prefer more open country with bush and scrub, or shady thickets on the banks of a stream. There they love to bathe and wallow in the mud early in the morning or in the cool of the evening. The black rhino seldom eats grass. It browses on the leaves and twigs of different kinds of trees, especially the acacia. Instead of a blunt, square muzzle—like its so-called "white" cousin—it has a long,

pointed upper lip with which it grasps and plucks the leaves from bushes and low-growing trees with the greatest ease.

The Indian rhinos are smaller than their relatives that roam the wilds of Africa, and differ from them in many other ways. They have only one nose horn, about a foot long; but in addition to this weapon they are armed with a pair of sharp-edged tusks in the lower jaw. These they use more than their horns when fighting.

Most remarkable of all is the animal's skin. All these strange beasts have an extraordinarily thick, tough hide, but the Indian representative of the family has the thickest and toughest and most extraordinary coat of them all. As he moves on his ponderous way this rhinoceros reminds us more of an armored tank than anything else.

The loose skin that covers his body, shoulders, and hind quarters is divided by heavy folds into separate pieces that look like armored plates riveted together by large round knobs—you almost expect to hear him clank as he walks! Clad in such a suit of armor as this, the rhino has little to fear from the claws and teeth of other jungle dwellers.

Even the spears of native hunters will glance off his thick hide.

The favorite haunts of this strange animal are the swampy jungles, where the grass often grows twenty feet high. Here he can move about without much fear of being seen, for in spite of all his advantages of size and warlike equipment, the Indian rhino is not very courageous. He seldom attacks anyone unless he is very much upset, and his occasional mad charges are due more to fear than rage. In the heat of the day he lies in the shade and peacefully munches the grass; and as with all his relatives, his chief enjoyment is bathing in the forest streams and wallowing in the mud.



Photo by N. Y. Zoological Society

The African rhinoceros which you see above wears an armored affair, as does the Indian variety, but this one lacks the double folds of skin on shoulders and hind quarters. He is the proud owner of two horns, while the Indian rhinoceros has only one.

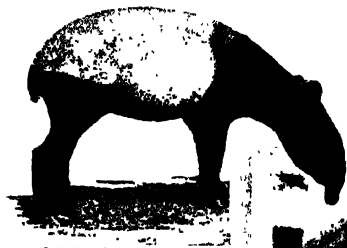
THE GIANTS OF THE FOUR-FOOTED WORLD

Last and least of these queer beasts comes the pigmy rhinoceros, or chitagong, as it is called, an odd little animal not much more than three feet high, with two horns and a thin, hairy coat over its thick skin. It is a

almost like trunks—though not quite. The tapirs seem very proud of their trunklike snouts and are always wriggling them and turning them up at the tip. This makes the queer animals look as if they were sneering.

At the left is the Malayan tapir. His black and white coat is well adapted to his surroundings, for he lives in a land of bright lights and black shadows, and is very hard to distinguish from the landscape.

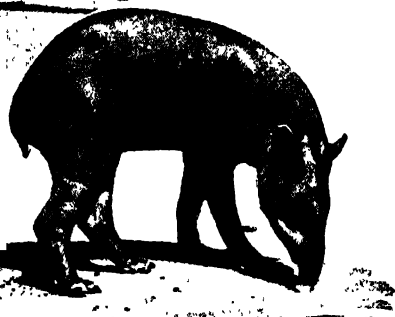
Photos by N. Y. Zoological Society



native of the East Indies, where it makes its home in thick jungles on the slopes of the forest-covered hills. We do not often have an opportunity of making the acquaintance of this dwarf rhino, since it is very timid and hides itself from view as far as possible. Unfortunately, too, the chitagong, like so many interesting animals, is becoming very rare.



Tapirs are shy, quiet folk who live in dense forests where there is plenty of water to bathe in. In the center is Baird's tapir, which is found from Mexico to Panama. To the right is a South American variety. Tapir babies are very easily tamed and become quite devoted to their master.



The rhinoceroses belong to a special division of hoofed animals known as "odd-toed animals," a small but select assortment of creatures made up of only three families. All of them have an odd number of toes on their feet. They are the rhinoceroses, which have three toes on each foot; the tapirs, which have four on the front feet and three on the hind feet; and the horses, the "oddest-toed" animals of them all, which have only one toe on each of their four feet.

The Odd Nose of the Tapir

Besides having "odd" toes tapirs are odd animals in several ways. One might imagine that ages ago, when they started out in life, Mother Nature intended them to be somewhat like the elephants, but gave up the idea when they had grown to be only a little bigger than pigs, with noses so long as to be

upright on its head and the back of its neck. Altogether there are four different kinds of tapirs in America, distinguished one from another by having pale cheeks or a white chin. Otherwise they are all very much alike both in looks and in ways.

Few animals are more timid than these strange forest folk. They hide themselves in the dense jungles and make regular pathways through the thick, tangled undergrowth, in which they can move about without being seen. These covered ways lead from the depths of the forest down to the banks of the rivers; and early in the morning and again in the evening the tapirs go down to drink and bathe. Unless anything frightens them the animals spend many happy hours splashing about among the reeds or wallowing

THE GIANTS OF THE FOUR-FOOTED WORLD

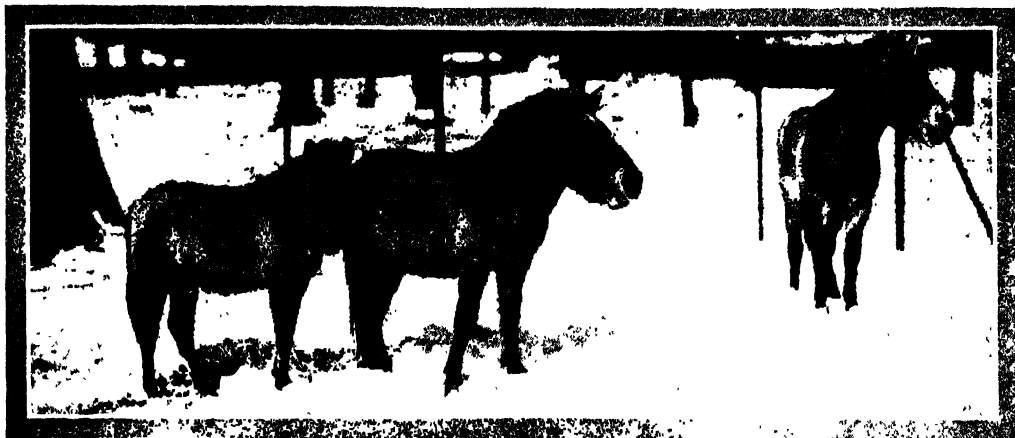


Photo by N. Y. Zoological Society

There are very few wild horses left in the world. Above, you see Przewalsky's horse, commonly known

as the Mongolian wild horse. It is supposed by many to be the ancestor of our domestic horse.

in the mud until they are plastered over with it. They can swim and dive, too, and are fond of walking about at the bottom of shallow pools and streams with just the tips of their funny snouts above the surface of the water.

All the daylight hours the tapirs spend resting or pattering up and down their secret pathways. With heads down they move slowly along, snuffing the ground as they go, to see if any dangerous creature has passed that way. A rustle in the thickets or the scent of some beast of prey sends them stampeding in a panic to the river, where they plunge headlong into the water and swim as far away as they can from the shore.

A tapir will run from almost any other animal, big or little, that boldly threatens the timid creature. But more than all does it fear the fierce jaguar. For although when brought to bay it will fight wildly and desperately with teeth and hoofs, such tactics are quite useless against the "American tiger." There is only one way in which a tapir can hope to escape from its dreaded enemy. When a jaguar springs on its back, the terrified creature will dash madly through the tangled undergrowth at such a terrific speed that the savage cat may be

swept from its victim by the low, interlacing branches under which it is carried. Then the tapir rushes wildly on, leaving the jaguar very much upset and annoyed.

You seldom meet more than one tapir at a time. It is a sad, solitary beast and prefers to live alone, though of course the mother tapir keeps her baby with her and looks after it until it is old enough to go its own way. She is an admirable mother, too. Shy and timid as she is, she will fight desperately in defense of her young one, and will knock down and trample furiously on any creature that attempts to molest the little thing.

Baby tapirs are most comical little creatures. They are very lively and playful, and are dressed in dark, velvety coats, gayly striped and spotted with bright yellow and white. They look just like painted toy animals. The mother has only one baby at a time, and while the little thing frisks and gambols about, she watches it with an anxious eye, ready to dash to the rescue should any danger threaten her precious charge.

The Old World tapir is a native of the Malay Peninsula. It is the largest of the tribe, measuring from seven to eight feet from the tip of its big snout to the tiny stump which is all these

This apologetic-looking fellow is a wild ass. Notice his big ears and the dark stripes upon his legs.

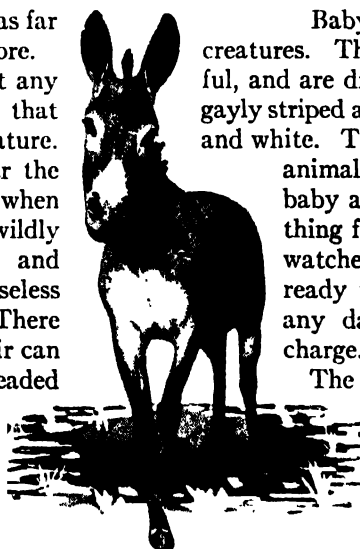


Photo by American Museum of Natural History

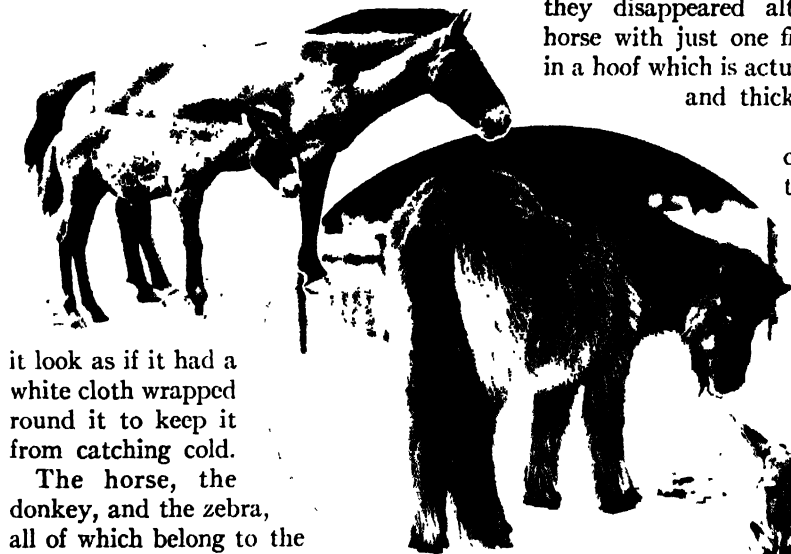
THE GIANTS OF THE FOUR-FOOTED WORLD

animals possess by way of a tail. It is quite the oddest-looking member of the tapir family, for while its legs and its head and shoulders are black, or very dark brown, the rest of its plump body is pale gray. This makes

threw their weight more and more on the middle toe, which was the largest and strongest toe of all. And gradually, as the long years passed, the outer toes, which were not used, grew smaller and weaker until finally they disappeared altogether, leaving the horse with just one fine strong toe incased in a hoof which is actually a greatly enlarged and thickened toenail.

While his feet were changing in this way, the horse was changing in other ways too.

He grew gradually bigger, until at last he became the splendid, graceful animal we know



it look as if it had a white cloth wrapped round it to keep it from catching cold.

The horse, the donkey, and the zebra, all of which belong to the "horse family," are distinguished from all other living animals by having only one toe on each of their four feet. Yet in spite of this the horse and his kin are famous all the world over for their swiftness. On their one-toed feet they can speed over the ground at such a rate that they outdistance almost all four-footed animals. This has made them useful to man.

The horse was not always as he is now. Long ages ago—two or three million years or so—his ancestors were quite small animals, about the size of a hare, with five toes on their front feet and four on their hind ones; and they walked flat on the soles of their feet like tiny bears. To escape from their many enemies, the terrible creatures that tyrannized over the world in those days, it was important that these little animals should be able to make off very fast. So they took to running on their toes, finding that in this way they were much fleetier. Each succeeding generation of little horses became more and more "tip-toed," and they

Photos by N. Y. Zoological Society

At the top is a Mongolian wild horse with her baby, and in the center is a Celtic pony, one of those hardy, shaggy-haired little horses which are found in many parts of the British Isles. The best-known of these, the Shetland ponies, have been bred for man's use and transported to every part of the world. To the right is a kiang, a wild ass from Mongolia and Tibet.

and admire and use so much to-day.

We hardly think of the horse as a "wild" animal. For many, many centuries now he has been the friend and servant of man. Even the herds of wild horses that scour the plains of South America are probably the descendants of tame horses that escaped from their owners many years ago; though there are still genuine wild horses in Asia.

There are no wild horses on the prairies of North America; yet it is almost certain that North America was the original home of the little horses that lived so very long ago. From here they migrated into the Old World, from Alaska to Siberia, in times long past, when the northern parts of the world were much warmer than they are to-day.

Wild horses, donkeys, and zebras always

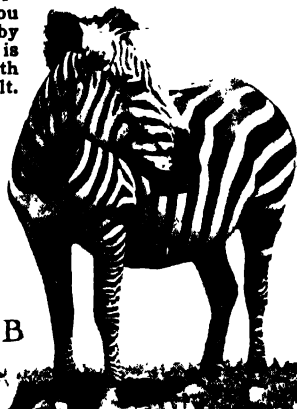


THE GIANTS OF THE FOUR-FOOTED WORLD

A. No one could ever mistake a zebra, for with the exception of a few members of the cat tribe, he has the most distinctive markings of any animal in the world.



B. There are several different kinds of zebra, and you can tell them apart by their stripes. At B is a Grant's zebra with her colt.



D. This effective study in modernistic design is Burchell's zebra, the commonest member of the tribe.



E. Mountain zebras are the only members of the tribe which do not frequent the plains. They hide in the remote and inaccessible highlands of Cape Colony.

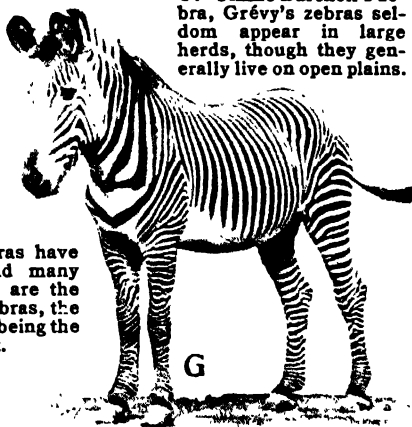


C. Burchell's zebras are found in herds, sometimes as many as a hundred animals trooping together. They live in thinly forested regions or open plains, and never stray far from their watering hole.



F. Grévy's zebras have thin stripes and many of them. They are the largest of the zebras, the mountain zebra being the smallest.

G. Unlike Burchell's zebra, Grévy's zebras seldom appear in large herds, though they generally live on open plains.



THE GIANTS OF THE FOUR-FOOTED WORLD

go about in troops, led by one of the finest and strongest of the herd, whom all the rest seem to understand and obey. They do not frequent dense forests but live in wild, open spaces where they can gallop freely without being hindered by trees and thick undergrowth.

Wild Donkeys of the Old World

Wild donkeys roam the sandy deserts in both Africa and Asia, over which they speed like the wind. They are so swift and alert that no horseman can overtake them, once the herd is off and away. The scanty herbage supplies them with all they need in the way of food, and at night they travel long distances to find water to drink. In summer troops of wild donkeys will leave the burning plains and roam for a time on the hills, where they canter over rough, rocky ground with wonderful speed and sureness of foot. They are so shy and wary that it is almost impossible to approach them; but the kiang (kí-áng'), or wild donkey of Tibet, is much more confiding in its ways, and will sometimes walk right up to a traveler to inspect him.

The kiang is a fine animal, more like a horse than other Asiatic donkeys. But as a horse neighs and a donkey brays, no one could mistake one animal for the other for long; its voice would be sure to betray it.

A zebra no one could possibly mistake for either a horse or a donkey, for though in size and form and in the shape of its head it is almost exactly like its nearest relatives, the wonderful striped coat of black and white or brown and yellow is worn by the zebra alone and distinguishes it from all the rest of the horse family.

When we see a zebra in a paddock in a zoölogical park, he is such a striking-looking animal in his gayly colored velvety coat that one would imagine it impossible to overlook him. Surely, one would say, he must have a poor chance of escaping the eyes of hungry beasts of prey on the lookout for a good meal. But no! The zebra's gaudy coat is actually a protection to the animal. In the

distance the bold, contrasting bands of color blend together to a misty gray. So when quietly grazing in the wilds of Africa zebras are almost invisible a little way off, or look like mere shadows against the shimmering brightness of the plains.

Zebras never live in dense forests or jungles. They like thinly wooded country, open glades, or great plains where there is hardly a bush or a tree to be seen for miles. They go about in herds, as horses and donkeys do, each troop under the command of a recognized leader.

Sometimes antelopes, buffaloes, and even ostriches join the zebra; and this strange assemblage of creatures, apparently realizing that there is safety in numbers, wander about together for the sake of the protection they enjoy in belonging to such a large company. And no doubt the oddly-assorted animals are genuinely useful to one another. The ostriches, with their long necks, can act as sentinels and keep a keen lookout for danger, while the zebras and antelopes, by their keen scent, are quick to detect the approach of an enemy. Directly one or another of the company gives the alarm, the rest do not stop to argue the matter, but in a moment zebras, antelopes, buffaloes, and ostriches all flee for their lives at top speed.

The Zebras' Worst Enemy

His Majesty the lion is the zebras' chief foe, and the old rascal, knowing their habits, will lie in ambush by the water, waiting for the herds to come down to drink in the evening. If the zebras scent him or see him before he makes his spring, the lion has a poor chance of catching one of the fleet-footed animals. Even when he takes the herd by surprise and leaps into the midst of them before they have time to take to their heels, the lion may fail to succeed in his fell purpose, for the terrified animals will plunge and kick so desperately that the "king of beasts" is forced to abandon the idea of a zebra supper. All he can do is to beat a retreat before such an onslaught of battering hoofs.

MAMMALS

Reading Unit No. 10

XXXXXXXXXXXX

THE MOST SAVAGE OF THE SMALL BEASTS

*Note: For basic information
not found on this page, consult
the general Index, Vol. 15.*

*For statistical and current facts,
consult the Richards Year Book
Index.*

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make weasels real beasts of
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What makes weasels invisible in
the winter?
How does a skunk defend him-

self?
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Summary Statement

The weasels are the most fero-
cious beasts alive, fearing nothing,
attacking everything. Their rela-
tives, the mink and the otter, pre-
fer to hunt fish; their pelts are

in great demand. Costly white
ermine coats come from weasels
whose furs turn white in winter
to match the snow.

THE MOST SAVAGE OF THE SMALL BEASTS

Here are two long-tailed weasels from British Columbia who have put on their white winter coats. They are wondering what manner of little animal lives in the tree stump, and whether he mightn't be rather nice for dinner.



Photo by American Museum of Natural History

The MOST SAVAGE of the SMALL BEASTS

It Is the Weasel Tribe, with Many Different Members, Who Seem to Have a Claim to That Unlovely Title

BIG animals are not always savage. Indeed, many of the four-footed giants of the wild are quite peaceful and harmless. On the other hand, the weasels, the smallest of the beasts of prey, are the most blood-thirsty, vicious little wretches to be found in the whole of the animal world. And a very good thing it is that weasels, and their first cousins the stoats, the martens, and the polecats, are all of them small, for if they were as big as lions and tigers there would very soon be few other animals left in the world.

There is hardly a district, north, south, east or west, where some of these fierce little hunters are not thoroughly at home. Wherever there are woods, fields, and hedgerows to take cover in, and rats, mice, rabbits, and birds to kill, there you will surely find some of the wily weasel tribe pursuing their pitiless way.

Except when they are sleeping off the effects of a strenuous night out, the weasels, with glittering eyes and savage determination, are always on the warpath chasing their unhappy prey. Unlike the nobler beasts of prey, who kill to satisfy their hunger, weasels will kill simply for the joy of killing. Having dispatched one victim they will often leave it lying on the ground and bound away on the track of another. They are bold, too. If you meet a weasel on the path the impudent little creature is quite likely to stop and snarl at you as if it expected you to get out of its way. But when you threaten it with a stick it leaps high into the air and is off in a flash.

You have only to look at a weasel to tell what a savage little beast he is. He has a small, flat, wicked-looking head with a sharp, pointed snout and small, sneaky, glittering eyes; and he is always snarling to show you

THE MOST SAVAGE OF THE SMALL BEASTS

what sharp teeth he has. His legs are remarkably short and stumpy and his body is long and snaky. When hunting he can run very quickly, with his body almost touching the ground; or more often he leaps along, curving his body like a bow and covering a great distance at a single bound.

A weasel hunts by following his nose. When he has picked up the scent of his prey, off he goes and nothing will stop him until he has run it down. A rabbit can run more swiftly, but it cannot shake off a weasel. He just follows on and on till he tires the bunny out. A rat or a mouse may dash into its burrow, but the slim weasel can squeeze his way in after it. He will even spring high in the air to catch a bird that has taken flight to escape him.

But sometimes the tables are turned on the fierce little hunter. An owl or a hawk may spy him when, on mischief bent, he is gayly bounding along in the twilight. Then they swoop down on the little rascal and bear him away in their claws. Yet even now the weasel may escape the fate he richly deserves. For unless he is killed outright he will try to swing his head around and bite his captor through the neck. Then the bird falls to the ground dead, and the wily weasel lives to hunt another day.

Weasels usually kill their prey by biting it in the neck or throat, and unless they are very hungry they do not eat it, but after sucking its warm blood leave it lying on the ground. When the weather grows cold and there is likely to be a scarcity of food even for such wily hunters as the weasels, they often take home some of the animals they

kill and store them up in their larders. Eggs, too, they are very fond of. As many as fifty pheasants' eggs have been carefully packed away in a weasel's nest, and what is more wonderful still, not a single one was cracked!

Weasels make their homes in hollows among the roots of old trees, or sometimes they take possession of a burrow made by a ground squirrel, a rabbit, or a woodchuck—after they have killed and eaten the rightful owners. Here in the spring-time they bring up their little families. All through the summer they take most of their hunting spoils home to their hungry little

youngsters. For ferocious little beasts as they are, the weasels are good parents. They take great care of their children and do the hunting for them until the little things are quite grown up:

Baby weasels are the most amusing of young creatures. It is a funny sight to see them frolicking together outside their burrow on a warm summer evening. They skip and bound about, or clasp each other with their wee forepaws and roll over and over together

on the ground at such a rate that it almost makes you giddy to watch them. But they soon begin to show their savage disposition. If one gives its brother or sister too hard a nip the sham fight becomes a real one, and the bad-tempered little animals hiss and yap with rage and go for each other with teeth and claws.

A Dangerous Band of Hunters

The little weasels stay with their parents until they are quite grown, and toward the end of the summer the whole family party, consisting of the father, the mother, and their



Photo by N. Y. Zoological Society

This graceful little animal has two names. In the summer time he is called a stoat, but in winter, when he puts on his beautiful white coat, he becomes an ermine. Ermine fur has from early times been used to adorn the robes of princes and high dig. III only the royal family might wear it, but now it appears on almost all the robes of state, and is worn by many a fine lady in our own democratic land.

THE MOST SAVAGE OF THE SMALL BEASTS



Photo by American Museum of Natural History

The weasel is a very ferocious little beast, and will eat anything he can lay his paws on. He will chase field

five or six young ones, may often be seen out hunting together. When they hunt in packs like this they are really dangerous. They will furiously attack quite large animals, and have actually been known to turn on a man who tried to interfere with their sport. To have six or seven of these wild, snarling creatures springing and leaping at you on all sides is a really serious matter.

But of course such a thing as this does not often happen. The smaller weasels content themselves as a rule with hunting meadow mice, wood mice, moles, whom they chase up and down their underground tunnels, and little jumping shrews. Larger weasels chase rabbits and hares and kill every ground bird they find. And all weasels, large or small, climb trees to rob the birds' nests.

Weasels That Change Their Coats

The smaller weasels are about nine or ten inches from their sharp little noses to the tip of their stumpy tails; some are even smaller. But the larger ones are nearly twice as long as this and have longer and more bushy tails. In England the larger weasels are called "stoats," but there is little difference between them and their long-tailed cousins in America.

The small weasels have ruddy coats and white throats and breasts, while the stoats,

mice, moles, and rabbits up and down their underground hallways and even leaps into the air after birds.

or long-tailed weasels, in summer are dressed in coats of chocolate brown and have yellowish throats and waistcoats. But in the winter the larger weasels living in Canada and the northern states, as well as in the more northern countries of the Old World, turn perfectly white except for a little black tuft at the tip of their tails.

What Is an Ermine?

In their winter dress these weasels are called ermines, and their white pelts with the little black tails are very valuable. The coat is extremely useful to the little animals, too, for when the ground is covered with snow, the little creatures that the ermines hunt for food cannot see their pursuers, whose snowy white coats are quite as good as a magic cloak of invisibility.

Many other weasels that live up north turn white in the winter. The New York weasel is a handsome dark brown at other times of the year. And the least weasel, a little fellow only six inches long and smallest of all the weasel family, puts on a snowy habit to match the snowy earth up on the borders of the arctic regions, where he lives.

Besides the true weasels there are many other interesting animals belonging to the weasel tribe. They are to be found in Europe, Asia and Africa, and South America. Some live on the ground, some in trees, and a few

THE MOST SAVAGE OF THE SMALL BEASTS

are water animals. Most of them are short-legged, long-bodied creatures, and with a few exceptions all are ruthless hunters and bear very bad characters in the animal world.

There are the martens and sables that live in dense evergreen forests by choice. They chase the squirrels through the trees, rob birds' nests, and then leap to the ground to be off on the trail of a hare or a jack rabbit. They kill partridges and any birds that nest on the ground, and if they live near a farm they will raid the poultry yard and slaughter sitting hens and their broods of chicks, one after another.

A marten often makes its home high up in an old tree trunk. It will take possession of a squirrel's hole or a woodpecker's nest if it chanced to find one to suit it. The cunning little animal loves to sit with its nose just poking out of the hole, watching all that goes on in the world below with its bright, wicked-looking eyes, ready to pop back out of sight in a flash if it sees anything alarming, or to spring out on a bird resting on a bough or on some little woodland creature feeding quietly on the ground at the foot of the tree.

The largest and most mischievous of the martens is the "fisher." This animal is not very well named, for it does not live on fish, but mainly on porcupines. Indeed, the plague of porcupines in our

northern forests is due to the fact that the fishers have been trapped in such large numbers.

For the fisher is as big and nearly as stout as a fox, and has a beautiful skin; so the trappers are glad to catch him if they can—and of course they often do. It is not so easy to snare the sly marten. He will sometimes follow the trail of a trapper, watch him set it, and after the man has gone off, he will set to work to pull the trap to pieces with his strong teeth and claws. He will steal the bait, or perhaps kill and eat a sable or a mink that has been caught in it, for the wicked old fisher would as soon make a meal of one of his own relatives as of any other animal.

The minks are smaller than the fishers but larger than weasels, and since

they live in Siberia and the northern part of America they have very thick warm coats to keep out the cold. So these little hunters are themselves hunted and trapped for the sake of their valuable fur, which is a soft dark brown with little touches of white on the animal's chin and chest.

Minks are seldom found away from water of some kind,

for the little animals are

Our mink is just as much at home in the water as he is on land, for he can dive and swim very well indeed, and his thick hair keeps him from taking a chill.



Photo by British Museum

Here are two pine martens who, in spite of their name, do not necessarily insist upon pine trees, though they do often live in forests where these trees are numerous.

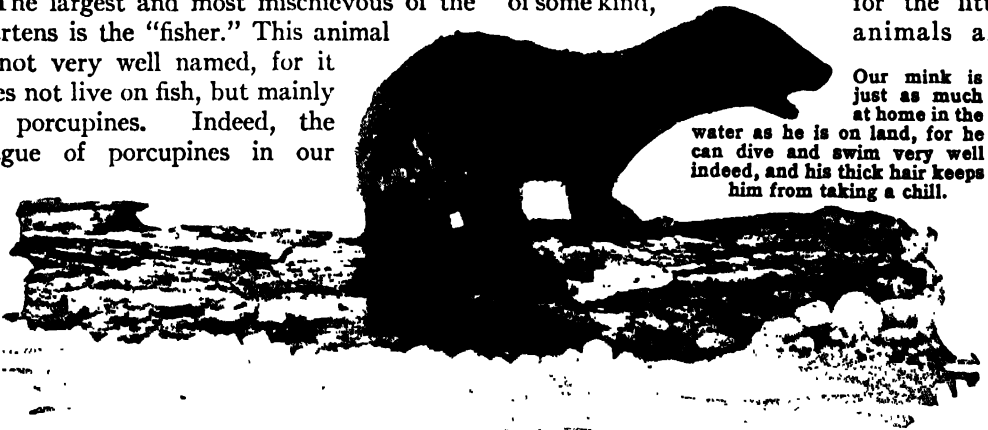


Photo by N. Y. Zoological Society

THE MOST SAVAGE OF THE SMALL BEASTS

quite as much at home *in* the water as out of it. If chased by a fox or a wild cat the mink will head for the nearest lake or river, dive in without a splash, and swim out to safety as swiftly as a fish—leaving his enemy on the bank very much disgusted at his disappearance. Then, if while he is enjoying himself in the water an otter should try to catch him, the mink makes a dash for the bank, springs out, and darts up the nearest tree as lightly as a squirrel. So the little brown fellow is able to laugh at his enemies both in the water and on dry ground.

He has a wide choice of food, too. He catches fish, crayfish, and frogs, crunches up fresh-water clams and mussels, digs up grubs and worms from the soft soil on the banks of the rivers, and hunts "rats and mice and such small deer" through the woods and swampy lands. He is as restless and energetic as his cousins the weasels, and has no particular time for going to bed. He just chases round until he is tired out, then slips into a hole in a rock or a hollow tree stump, and as soon as he wakes up he is off hunting again, whatever time of night or day it happens to be.

The European mink is sometimes called the polecat, but in America this name is given to the skunk, a remarkable little member of the weasel tribe, with handsome black and white coat and wonderfully fine bushy tail of the same colors, which he waves high over his back like a plume.

But it is not so much for his coat that the skunk is famous as for

the extraordinary way he has of defending himself. Under his tail he has little bags of a most evil-smelling scent, so strong that if a single drop falls on your skin or your clothes everybody will know it and get as far away from you as possible—and it is a long, long time before you can get rid of the disgusting odor. No animals can stand this abominable stuff, which makes them all violently sick. Men, dogs, even

pumas give the skunk a wide berth and shrink from interfering with him. In consequence this black and white beast is absolutely fearless. He is not in the least afraid of anything. For well he

knows he has only to turn his back on his enemy and squirt a jet of this almost suffocating scent at him and the unfortunate animal will make off as fast as ever he can.

But unless he is alarmed or annoyed the skunk is a most inoffensive little creature. He is a good-tempered, intelligent, and cleanly, not always trying to pick a quarrel with his neighbors, as so many of the weasel tribe are. He is much less restless, too. He does not spend every minute of the day and night hunting. In summer and autumn, when there are numerous grasshoppers, crickets, and other insects to be had for the trouble of picking them up, when the



Photo by N. Y. Zoological Society

Here is a ferret, a domesticated relative of the polecat. He is a sly, untrustworthy creature, but he is very good at hunting rats and burrowing down after rabbits.

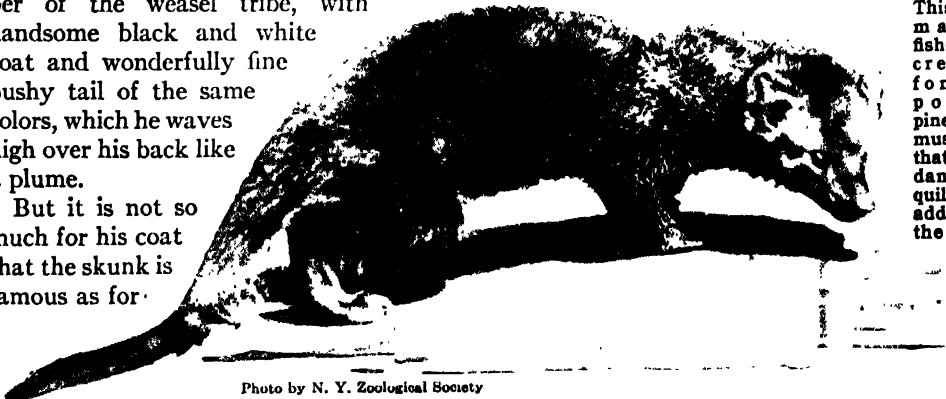


Photo by N. Y. Zoological Society

This is a marten fisher, a creature fond of porcupines. He must feel that their dangerous quills only add zest to the hunt.

THE MOST SAVAGE OF THE SMALL BEASTS



Photo by American Museum of Natural History

Our skunk is about to take her babies for an airing. If they have used their sprays of objectionable perfume recently, they probably need the airing very badly indeed. It is best to give these interesting animals a

grass is full of nests of young field mice and the bushes full of nests of young birds, the skunk is likely to grow fat and lazy in the midst of such abundance. When frost sets in and his principal supplies of food are cut off, the skunk makes the best of a bad job and, seeking comfortable lodgings for the winter in a sheltered wood, goes sound asleep for weeks or sometimes months at a time—though during spells of mild weather he may come up for an hour or two, even in winter, to have a look about and see if he can find a few insects or catch a small wood mouse.

Usually a whole family of skunks, and sometimes two families, spend the winter together in the same underground apartment, or in a nice roomy hole in an old stump. For the little skunks, who are born in the spring, stay with their parents and seldom leave them until they are about a year old. Early in the summer you may see the mother skunk proudly leading her new brood of

wide berth, for, although they will not use their weapon except when they consider themselves in danger, they might very easily think that *you* were dangerous, and the results would be extremely regrettable.

six or seven young ones out into the woods for an evening walk. The funny little things toddle along behind her in Indian file, with their fluffy, black-and-white tails waving over their backs. Such a procession will clear any village street in a few moments. Under their mother's tuition they soon learn to chase bugs and various blundering night-flying insects, to find the eggs of birds that nest on the ground, and to dig tiny shrews and wood mice out of their burrows.

Altogether, in spite of the horrible scent they carry about with them, skunks are very

The glutton, or wolverine, which you see below, has an unattractive reputation. He is fond of looting traps, will attack beavers in their homes, and has been known to prey on sick or wounded deer. He is too lazy to chew his food properly, but gulps it down in large chunks which almost choke him!

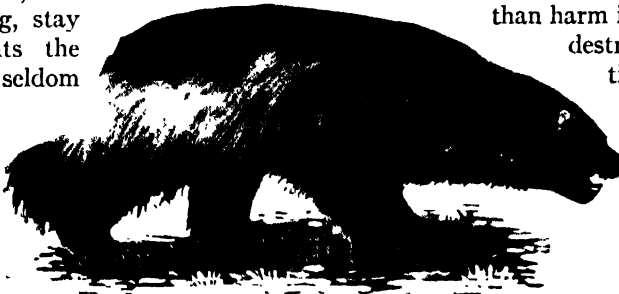


Photo by American Museum of Natural History

jolly, likable little woodland folk, though like all the weasel tribe they cannot resist seizing a roosting fowl when they have an opportunity. Even this may be forgiven them, for skunks do much more good than harm in the farmyard by destroying large quantities of troublesome rats and mice.

A very different fellow is the wolverine (wōl'-vēr-ēn'), or "glutton," as he is sometimes called because of

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his greedy ways. You would never guess that he belonged to the weasel tribe if you met him plodding along in the forests right up near the Arctic Circle. He looks much more like a small bear. He is a stout, clumsy creature, nearly three feet long, dressed in a loose, shaggy coat of coarse dark fur. He walks like a bear, too, stumping heavily over the ground on the soles of his feet, instead of prancing and bounding about as the slim little weasels do.

No one loves the wolverine, or has a good word to say for him. The trappers hate him, for not only does he spoil their sport by springing their traps and stealing their game, but he will scent out the trappers' stores of provisions, devour all he can, and spoil the rest by scattering it about and making it quite unfit for food. Even a hungry animal will not eat food that has been pawed and nosed by a glutton, for, like most of the weasel tribe, the old rascal has a very disagreeable scent and he leaves traces of it on everything he touches. He steals the supplies that the arctic foxes, lynxes, and martens have thoughtfully put by for the winter, and is exasperatingly clever in scenting out hidden treasure of this kind, however deeply and cunningly it is buried.

A Plundering, Sulky Thief

When he can steal food from others the glutton always prefers this way of procuring a good meal, but in the summer time, when there are few traps to rob and no stores to plunder, the sulky, thieving beast is obliged to hunt for himself. So he skulks around alone through the thickets and swamps, seeking whom he may devour. He kills birds and crunches up their eggs; digs up mice and lemmings from their runways in the moss;

pulls down young or sickly deer, and seizes fox cubs as they play around the mouth of their dens.

So the gloomy glutton pursues his lonely way through the dreary northern forests, getting himself disliked by all two-legged and four-legged folk wherever he goes.

Now the old badger, another strange member of the weasel tribe, bears a very different character. He, too, is a big, somewhat bear-like animal with an awkward, rolling gait, but he is a harmless, slow old fellow who goes on his way and minds his own business. Of course he kills and eats small animals when he is hungry. He has to, because he is a carnivorous beast and needs fresh meat to keep him in good condition; but he is not a greedy thief like the glutton or a ferocious hunter like the wicked little weasel.

The American badger is not quite so big as a wolverine. He is very broad and rather flat, and clothed with thick grizzly-gray hair, and when he lies down he spreads himself out like a doormat. But the strangest thing about him is his queer black face, which is ornamented with three broad white stripes—one running from the top of his head to his nose, and another one down each cheek. He also has some white patches on his throat and ears. The badger's tail is not much to boast of; it is quite short, and so, too, are his hind legs. But his feet are provided with strong stout claws; and he can grip like a bulldog with his powerful jaws, so he is well able to defend himself if necessary.

The Shy Badger That Lives in a Burrow

One does not often see the badger, for he is very timid, and prefers to take outdoor exercise when nobody is about. He spends most of the day in his burrow, which he digs



Photos by James's Press Agency, and N. Y. Zoological Society

These little animals with their funny striped faces are badgers. They make very interesting homes for themselves, carving out whole hillsides with honeycomb passages running in every direction. The badger has the curious accomplishment of being able to trot backwards. Perhaps, instead of wanting to look where he is going, he likes to see where he has been!

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out for himself with his useful claws, coming out to hunt round for his supper late in the afternoon. He shuffles about on the ground and snaps up beetles, grasshoppers, lizards, and snakes, digs mice, gophers, ground squirrels, and prairie dogs out of their holes, and when his hunger is appeased he trundles back to bed. In cold weather, like so many northern animals, he stays indoors for months together, and sleeps until the warm days come back again.

The European badger is much like the American animal, only he is not so flat and his hair is very much coarser, while his face is white with a broad black stripe down each side. There is not much difference in their ways. He is a lazy old fellow and passes many pleasant hours dozing and sucking his paws in his underground home. He eats roots and insects and small animals and even prickly hedgehogs, whose spiny armor he rips off with his strong claws.

He likes honey almost as much as a bear, and digs out both bees' nests and wasps' nests from the ground regardless of the attacks of the angry insects, since he is protected against their stings by his thick loose coat. Of course the badger does not get honey from wasps' nests, but he likes the grubs in their papery combs almost as well.

There are many more interesting animals belonging to the weasel tribe in Africa, in Asia, and in South America. We have not time to visit them all, but we must not miss the otter, for he is one of the most interesting—quite different in his ways from his relatives, since he is a water creature. With the exception of the mink, who loves to swim in the lakes and rivers, the rest of the weasel family are entirely land animals.

Anyone who saw the otter swimming about might take him for a seal, for he looks very much like one. But when he climbs out on the bank we can see that he has legs, not flippers. His short feet have webs between the toes and are as good as fins, and his tail, which is broad and flat at the base and round and pointed at the tip, makes an excellent rudder. Indeed, in every way the otter is perfectly fitted for his particular way of life.

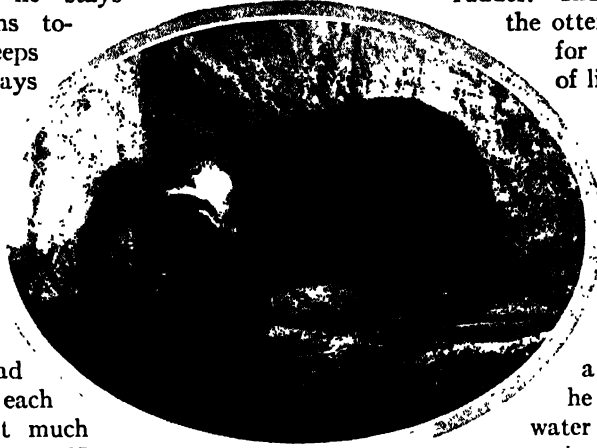


Photo by American Museum of Natural History

The American otter you see above has just caught a fish and can't decide whether to eat it or take it home to his family. The matter is not very serious in any case, for an otter is a marvelous fisherman. A quick dive into the water, a few strong strokes with his webbed feet, and he has another fish.

In the water the otter is quite in his element. He swims and dives and twists and turns as easily as a fish. But of course he does not breathe like a fish, so although he can stay under water for several minutes at a time, he is obliged to come up to the surface again when the air in his lungs is exhausted. He is the merriest of fellows and loves to sport and gambol in the water; but his chief delight is to chase the fish up and

down stream, dash after water rats, and catch wild duck unawares by swimming up to them under water and seizing them from below.

Fishermen do not like otters, since the little animals unfortunately are so fond of fishing that they never know when to stop the sport. They do a great deal of mischief by the wholesale killing of salmon, trout, eels, and other valuable food fishes. They kill many more than they can possibly eat, and after tasting each fish by biting a piece out of its back, they leave it on the bank of the stream and dash off after another one. In their love of hunting just for the fun of the thing otters are every bit as bad as their fierce little cousins the wily weasels!

But the otter does not spend all of his time in the water. When the streams are low and fishing is bad, he will sometimes travel overland from one stream to another,

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getting over the ground with a curious loping gallop at a surprising speed, in spite of his short legs. In winter he often takes long journeys inland in search of food, and will sometimes actually raid poultry yards and kill fowls and ducks. Or he will flounder about in the snow, tobogganing down every slope he comes to on the chance of finding something he can seize and eat. In Canada and the most northern part of the United States otters often pass most of the winter under the ice.

Young otters stay with their parents for at least a year and sometimes even longer. They make their home in a hole in the bank of a stream or in a comfortable dugout among the roots of some great old trees not far from the water's edge; and they have the best of times together, leading a thoroughly jolly, sporting life. Unless they are disturbed by hunting dogs or some restless animal that does not keep the "jungle law"—"Remember the night is for hunting, and forget not the day is for sleep"—the otters stay quietly at home until the sun is low in the sky. Then, wide awake and full of life, they start out on their nightly adventures. If their den happens to be at the top of a steep sloping bank, the otters start the evening sports by sliding down the slippery toboggan, one after another, plump into the water! They love this game so much that time after time they will scramble back up the bank just for the fun of sliding down again!

Young otters, and old ones too, thoroughly enjoy a good romp, and the ground all round about their den is nearly always trampled down from the boisterous games they play

together. The young ones roll over and over like a lot of puppies, claw up grass and fling it all over the place. They have tugs of war with the sticks that are scattered about, and behave in the maddest, merriest way.

At first baby otters are afraid of the water. Their mother has to push them in when she gives them their first swimming lesson, and she will sometimes take one of the little things on her back and swim down stream with it to teach it not to be afraid. But after the first dip the young otters are bolder, and soon they like playing in the water so much that the problem is to make them come out. Then the anxious mother has to chase her babies up the bank and home to bed in the early morning.

The greatest fun of all comes when the young otters are old enough to go fishing with their father and mother. Sometimes they take long summer excursions up the rivers and have all sorts of exciting adventures, hunting fish and water rats and thoroughly enjoying themselves. They do not go back every morning to their old home, but just pop into any nice hole they can find under the banks by the side of the water and go to sleep there until the sun goes down. It sounds delightful!

And now we must take leave of the otters and all the rest of the weasel tribe. But we must not forget that although, with one or two exceptions, they are such fierce, ruthless little hunters, they do a great deal of good by destroying rats, mice, and other small creatures that do so much damage to our crops. So even the wily weasels have their part to play in this wonderful world of ours.

The pretty little otter, which you see at the right, has a rather bad time. Because of his greed for fish he is hunted in Europe by sportsmen with packs of otter hounds that are bred and trained for the work.



The American otter is killed by the thousands for his beautiful coat. But the sea otter is most unlucky of all, for he wears as an undercoat the exquisite golden-brown fur that brings such a fabulous price.

Photo by American Museum of Natural History

MAMMALS

Reading Unit No. 11

BEASTS THAT GNAW FOR A LIVING

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

How all rodents are related in structure, 4-364-65
Where squirrels nest, 4-366
How squirrels came to live in England, 4-367
Flying squirrels, 4-368
The ways of a chipmunk, 4-369-

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Prairie dogs and gophers, 4-370-72
The fat woodchuck, 4-372-73
The busy beavers, 4-373-76
Beaver lodges and dams, 4-374-76

Things to Think About

What kind of teeth do all rodents have?
Why do squirrels hide nuts in the summer?
Why are "flying squirrels" so named?
What keeps chipmunks alive dur-

ing the winter?
What happens to an animal during hibernation?
How is a beaver lodge built?
Why do beavers build dams?
What part of a tree is eaten by beavers?

Picture Hunt

What kind of nuts do squirrels like best? 4-364
How can you recognize an albino? 4-365
How well can a flying squirrel fly? 4-368
Is the woodchuck a reliable

weather prophet? 4-371
With what tools do beavers cut down a tree? 4-373
Of what materials is a beaver lodge made? 4-375
Where are beaver lodges built? 4-376

Leisure-time Activities

PROJECT NO. 1: If no squirrels live on your street, visit a park, and feed nuts to squirrels. Notice how they handle their food and whether any of it is buried.
PROJECT NO. 2: Learn where

the nearest beaver dam is. Visit it and examine it closely. See if you can surprise the beavers at their work. Photograph the lodge and the dam. Or find in books and magazines pictures of beavers and their dams.

Summary Statement

The rodents have chisels for teeth and grinders at the rear of their jaws. The most common rodents are squirrels and chipmunks. Beavers use their teeth

to gnaw down trees. Beavers always work except in winter, when their children are born. Their families then eat the food that has been stored.

BEASTS THAT GNAW FOR A LIVING

This little fellow is the common gray squirrel, who is so tame and friendly. He is an American by birth, but has been imported into England, where he has become a much-loved British citizen—and that in spite of the fact that he is very rude to his British cousins, the red squirrels, and drives them out wherever he goes.

If you want to be really kind to a squirrel, instead of giving him soft peanuts, which he ought to eat right away, you will give him sound hard nuts, such as walnuts, hazelnuts, or hickory nuts, for these will keep well in his storehouse and he can eat them when food grows scarce.



Photo by L. Ollivier

BEASTS THAT GNAW *for a* LIVING

The Cleverest Teeth in the World Belong to the Squirrels, Chipmunks, Gophers, Woodchucks, Beavers, and Their Relatives

WE CANNOT all go to the zoo to see the startling animals from the other side of the world, but we all can make friends with some of the small but very important four-footed folk called rodents (rō'dēnt), or "gnawing" animals—and some of them are very charming and entertaining. Many you know quite well already, for these little nibblers abound in every land, and you are certain to meet some of them wherever you go—unless, of course, you visit the North or South Pole, where no animal can find a living.

Hares and rabbits, rats and mice, squirrels and beavers, porcupines, besides many other odd or interesting little creatures, are all gnawing animals. They live in all sorts of different ways in all sorts of different places. Some burrow in the ground, some skip about the tree tops, some spend most of their time in the water. The woods, the plains, the fields, the hedgerows, the banks of streams

and rivers, all are peopled with hosts of these small, feeble folk. Some of them establish themselves and their families in our gardens, and a few, if they are allowed, will come indoors and make themselves very much at home in our stores and our houses.

Now a squirrel, a porcupine, a beaver, and a mouse do not appear to be very much alike; and few of us, unless we had been told, would guess that they are all really closely related and belong to the same order of animals. But there is one way in which you may always know a gnawing animal when you see it. They all have teeth of the same curious kind.

Right in the front of the mouth are four long, flat teeth—two in the upper and two in the lower jaw—with very sharp cutting edges, exactly like the cutting edge of a chisel. These chisel teeth stick out beyond the animal's lips so that you can see them even when its mouth is closed.

BEASTS THAT GNAW FOR A LIVING

At the back of the mouth are a few broad, flat-topped grinders, and between the front teeth and the back is a bare space, just as if all the little rodents had paid a visit to the dentist and had a whole row of teeth pulled out, top and bottom, on both sides of their jaws! But rodents do not miss these side teeth. They have never had them, and they do not need them. Their big front teeth and the strong back ones serve quite well for cutting and grinding their food.

With their wonderful chisel teeth the little animals are always gnawing and nibbling at something or other, but as fast as these are worn down at the tips they grow up again from the roots. As long as a rodent lives, its front teeth keep on growing. So they never wear out and are always sharp and ready for use.

Chief favorites among these little wild folk are the squirrels. No one can help liking the jolly little gray and red fellows that frisk about in the trees, their fine bushy tails waving like banners. The lively little creatures scamper up and down straight tall trunks as easily as you or I run up and down stairs, and using their great tails like a sail behind them, they leap from bough to bough without ever once missing.

A Busy Little Beast

Squirrels seem thoroughly to enjoy life. They are always busy, always full of excitement about one thing or another. You may see them at work or play much more often than you see most of the small chisel-toothed tribe. For a squirrel does not stay in bed all day. He does not believe in wasting the sunny hours in sleeping. He is up with the lark, has had his breakfast and is

hard at work long before lazier people have so much as opened an eye.

A squirrel does not often breakfast up aloft. He may sometimes sit on a branch and nibble a nut or a fir cone, but more often he comes full tilt down the tree trunk, carrying his food in his mouth, and bounds along the ground, with his tail rippling behind him, to seek some one favorite spot where he enjoys his meal at his ease. If there is a fallen tree or an old stump handy he will hop up on that.

Then sitting up on his haunches, with his tail up over his back, he holds his cone or his nut in both his little paws, which he uses just like hands, and gnaws away at it as hard as he can with his strong chisel teeth, as if he had not a minute to spare.

While he is eating he keeps a sharp lookout. He twists his head round with quick little jerks to right and left, pricks up his ears to listen to a rustle in the grass that might mean a fox or a weasel, and gazes up into the sky to see that no hungry hawk is hovering overhead.

Red squirrel or gray squirrel, whichever he may be, he is not often caught napping. At the first alarm he springs from his perch and is off in a flash, and the next thing you know he is whisking up a tree in a series of quick little jumps, gripping the rough bark with his strong sharp claws as he goes.

Once safely aloft the little squirrel simply explodes with wrath. He stamps his feet, he chatters, he scolds, and says all the rude things he can think of to the creature that has disturbed him at his morning meal. For squirrels are by no means meek and mild. They are quick-tempered, passionate little folk, and although whole families of squirrels live happily and peacefully together, two strangers meeting are almost sure to fight. Then the fur flies in good earnest as the angry little warriors bite and claw and whirl



Photo by N. Y. Zoological Society

Here is an American gray squirrel who is just a little different from his brothers, for he wears a coat which is almost white, instead of the gray coat which his family have taken for their uniform. He is called an albino.

BEASTS THAT GNAW FOR A LIVING

around so fast that it makes you giddy to watch them!

Breakfast over, the squirrels set about the business of the day. In spring there is the nest to make. The mother and father usually work together at this. They break off dry twigs from the trees, or green twigs if there are not enough dry ones, pile them up in a high fork in a tree, and pull and push and stamp them into place with teeth and hands and feet. The nest is lined with a mass of dry leaves and moss, and every now and again one of the funny little pair will jump into the middle of the heap and bounce round and round to hollow it out nicely.

The Snug House of a Squirrel

It takes several days to make this nest, and when it is finished the squirrels have a comfortable, solidly built house, warm and cozy inside and well thatched without to withstand wind and rain.

Some squirrels prefer to live in a nice roomy hole in a big tree, after they have stuffed it with plenty of leaves to make a soft bed. Others will take possession of a deserted nest that once belonged to a hawk or a crow and will roof it over with strips of bark, twigs, pine needles, and moss.

A gray squirrel is usually content with one snug home of this kind, but a red squirrel is seldom satisfied with a single house. He likes change, so he scoops out an underground dwelling in the soft mould beneath the roots of an old forest tree, builds another house up above in the branches, and sometimes makes over an old nest as well.

The squirrels generally work or play about until ten o'clock in the morning; then they retire for a midday nap. In warm weather they just curl up in the crook of

a tree or stretch themselves full length along a bough. There, gently rocked by the soft summer breezes, they doze away until three in the afternoon. If it is cold they pop indoors and go to sleep for a while with their tails coiled over their noses.

Playtime in Squirrel Land

A squirrel's tail is a most useful possession. It serves as a blanket in cold, wintry weather; it helps the nimble little animal to keep his balance when taking flying leaps up in the tree tops; and waving over his back as a flag of defiance it is flourished full in the enemy's face when the squirrel prepares for battle.

Summer time is playtime in squirrel land. Nest building is over, the children are growing up, and there is an abundance of delicious food to be had for the trouble of eating it. There are seeds of all sorts, fresh green shoots, young pine cones, acorns, green corn—almost everything that grows, in fact, the squirrels find worth eating. They gnaw the sugar cane, tap the maples, and lap up the sweet juice that flows from the wounds made by their sharp teeth. They even rob birds' nests, eating the eggs and the nestlings, too. For although they are not hunters, squirrels like animal food when they can get it, and will sometimes make themselves a nuisance to trappers by stealing the bait from the traps.

As soon as summer is on the wane work begins again. Now the squirrels start their preparations for the winter. Red squirrels begin to be busy as early as July, gray squirrels do not worry until the nuts are nearly ripe. Early and late the energetic little harvesters gather nuts and acorns and pine cones and pack them away, a few in one hiding place and

The sewellel, whom you see poking his nose over a dead log, is a resident of Western North America. His family are the last surviving members of an ancient race which is probably related to the squirrel family.

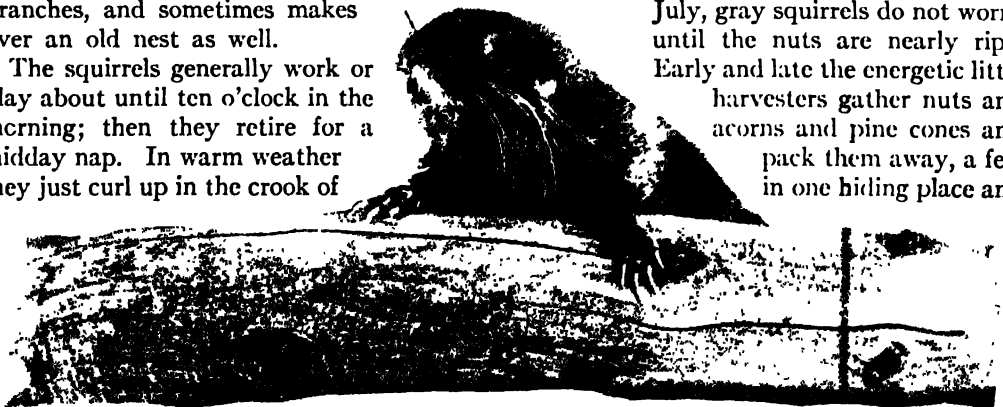


Photo by N. Y. Zoological Society

BEASTS THAT GNAW FOR A LIVING

a few in another, in readiness for the winter months when the greenwood trees are bare. They raid the orchards, too, and carry off apples to store away in hollow trees. If they can get at the farmer's bin they will help themselves to his corn.

Father and mother and the youngsters all work away together as hard as they can while the warm weather lasts. Then when harvest days are over and the first snowstorms sweep through the leafless trees, the industrious little family retire to their nest or their home in the hollow tree. Well they know that when they feel hungry they have only to hop out of doors and visit one of their private storehouses. You may see them on any bright winter day running along the branches to fetch a nut or two that they stuffed into a crack last summer, or busily digging in the snow to uncover the stores they buried in the ground.

Early in the year a new batch of babies arrives to join the family party. The last-year's babies are now big enough to look after themselves, so off they go to make room for their small brothers and sisters. They frisk about together in the bright spring weather, choose their partners, and think about setting up housekeeping for themselves.

The Red Squirrel and His Gray Cousin

The red squirrel is a smart little fellow. In winter his back and tail are a bright chestnut red, and his under parts pale gray. In summer his coat is not so red, while his waistcoat is pure white with black stripes on each side. He keeps to the woods and forests, for he is very wild and shy, but his gray cousin is bolder and often chooses to live in trees bordering the wayside on the outskirts of towns and villages. He is not a bit disturbed by the cars whizzing by below. He

will even settle himself in your garden if there is a nice shady tree there, and pop in at the open window to fetch nuts and cakes if you leave these dainties about for him.

Gray squirrels soon grow tame and can make themselves at home wherever there are plenty of trees and plenty of things to eat.

Some years ago a number of gray squirrels were taken across the Atlantic to England and set free in the London parks. They liked their new country very much. They settled down at once, built their nests, and brought up their young just as if they were at home in their native land. But

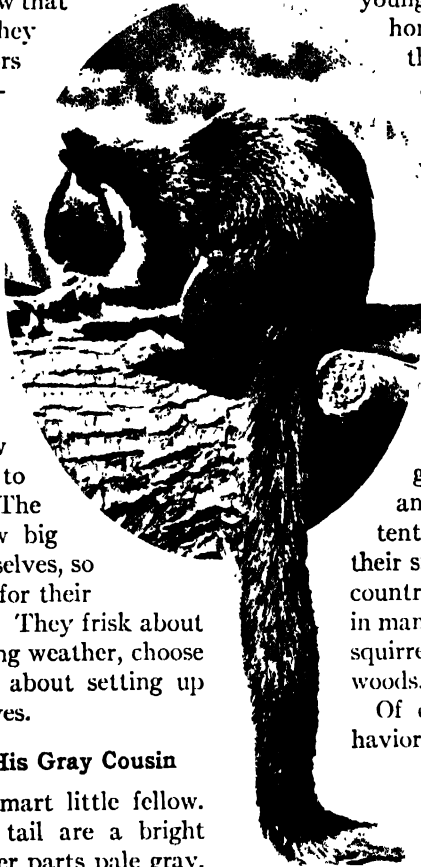
the gray squirrels did not agree with the European squirrels. They are larger and stronger than the little red fellows, which they bullied and chased about whenever they had a chance. So the red squirrels moved further out of town, away from the quarrelsome foreigners, and left the immigrants possessors of the field. Now the gray squirrels have increased and multiplied to such an extent that they have followed their small British cousins into the country round about London, and in many places have driven the red squirrels out of their own green woods.

Of course this is shocking behavior, but a gray squirrel has such engaging ways that he always makes friends wherever he goes. People spoil the impudent little fellow by giving him nuts and fruit, and he has grown so tame that he often joins picnic parties uninvited, quite sure in his little mind that he will be welcome.

There are many delightful tree squirrels all over the world except in Australia and Madagascar. In India the tiny palm squirrel is a general favorite. It is a pretty little

Here is the largest squirrel of all, the Indian giant squirrel, or Malabar squirrel. He is brightly colored and, as you see, has a long, thin tail, which he cannot curl around his back or hold fluffed in the air.

Photo by N. Y. Zoological Society



BEASTS THAT GNAW FOR A LIVING

This bright-eyed little creature is a flying squirrel. Of course he cannot fly, but he can glide great distances with his parachute extended, as you see him below.



animal, only five or six inches from its sharp little nose to its tail. It wears a reddish brown and white striped coat, and is wonderfully tame and confiding in its ways. Almost every Indian garden has its little palm squirrel living in the trees. There it darts about quick as a streak of lightning and chirps away like a bird.

There is a giant squirrel in Borneo, a handsome fellow with a splendid bushy tail, and an even bigger "giant" called the fox squirrel which lives in the mountains of North Carolina and Virginia. The fox squirrel is often more than two feet long from head to tail, and so strong that he has little to fear from any fierce woodland creature except the gray fox, the wild cat, and the raccoon. He makes his home in a hollow tree, or sometimes builds a large nest in the branches. He makes it out of dry leaves and strips of soft bark. But the fox squirrel has been so hunted that he is becoming very rare, and if people keep on shooting him he will soon disappear altogether from the hardwood groves and pine woods of the southern states.

Most charming of all are the pretty little flying squirrels, with their soft furry coats and big, dreamy eyes. They are shy little folk, and as they spend the livelong day

Photos by N. Y. Zoological Society, and American Museum of Nat. History

These little animals are easily tamed and make gentle, amusing pets. It has been said that they do not live well in captivity, since their folded parachute hampers their movements and they do not get much opportunity to "fly." But one little flying squirrel, named Petie, adapted himself very well to life in a house. He climbed curtains and sailed gayly down from them. He chose his own bed, in an overcoat pocket, and always slept there, no matter how warm the night. One day his little owner was in a hurry to get to school. She grabbed her hat, stuck it on, and rushed out the door and down the path. It was a few moments before she noticed that something was moving about in the crown of her hat. The "something" turned out to be Petie! It was too late to take him back, so the little gray friend went to school with his mistress, where he spent the day quietly snoozing in her pocket.

fast asleep in a dark hole in a tree trunk, few people know much about these gentle forest dwellers. At night they leave their hiding places, patter about the trees, and take long, gliding flights from bough to bough and from tree to tree. Of course these squirrels do not really fly, but they have wide stretches of skin between their forelegs and

their hind legs—like flying lemurs. It makes a capital parachute. A dozen or more of these wee furry folk often curl up together in the same hollow tree, and if you rap on the outside of their house some of them are sure to look out to see what is the matter. But they hate bright daylight and will not come out of doors until dark if they can help it.

American flying squirrels are not much bigger than large mice or small rats, and their soft coats are some shade of brown or gray with white underfur. Some of these little flying folk are to be found in most parts of the world where it is not too cold for them, and in the forests of India, Ceylon,

BEASTS THAT GNAW FOR A LIVING

and the Malayan countries there are several quite big ones with brightly colored fur.

While the true squirrels whisk about in their green leafy homes overhead, their cousins the ground squirrels, or chipmunks, are equally busy below. They are most intelligent and hardworking little rodents, always engaged in some important business that cannot possibly be put off

till another day. They have

their burrows to dig out or

enlarge; all the loose

earth to remove from

their excavations

and carry away—

for they never

dump untidy

heaps of earth

near an entrance

to their houses.

When there is no more

digging and delving to

be done, the chipmunks

have their beds to make of

moss, leaves, and grass, which

all has to be collected, carried

below ground, and arranged in

a bedchamber at the end of a

long passage. Then they have their

larders to fill with good nourishing

food for winter use, when even busy

chipmunks are obliged to stay at

home and rest for a while. They

gather seeds, corn, nuts, and acorns,

as fast as they ripen, and carry their

spoils home in their capacious cheek

pouches—which are often stuffed so

full that the chipmunks look just as if they had the mumps!

Once a chipmunk starts harvesting he never knows when to stop. He carries home far more food than he and his family can possibly eat. As much as eight pounds of corn is often stored in his cellars by one of these little animals, in addition to large piles of nuts, acorns, and other eatables of the kind. The chipmunk certainly leaves nothing to chance. He is determined not to starve, whatever happens!

Chipmunks are friendly little people. A little colony of them often dig their burrows side by side, choosing such places as open

hardwood groves where the turf is short and close for their tunneling operations. In hot summer weather the little neighbors will sit outside their doorways taking a sun bath and gossiping together of their private affairs. "Chirrup! Chirrup!" they go, making remarks and answering one another. And you would quite imagine they were asking

their friends when they thought of starting to collect their

winter supplies, or po-

litely inquiring after

the children's

health.

Then suddenly,

as they are all

chatting away,

one of the chip-

munks will give a

little warning cry.

It has heard a

rustle that might

mean that a gray fox is

moving in the shadow of

the trees near, or perhaps it has

seen a hawk hovering overhead.

But whatever it is, the chip-

munks don't stop to inquire.

They dash for home, pop down

into their holes, and are safely

indoors before the enemy de-

clares itself.

They really are most loyal

little comrades, these chipmunks.

They never forget to warn their

friends and neighbors of danger

before making for home them-

selves, and when the young chipmunks are

romping together in the sunshine, one or two

older members of the colony are sure to be

on guard to give the signal if there is any-

thing to fear.

The Ways of a Chipmunk

All through the summer and autumn the chipmunks work and play, feast on fruit and berries, rob birds' nests, pounce on the locusts as they settle on the ground, and have a thoroughly good time. Then when the days grow cold they retire to their underground mansions with an easy mind, knowing that their larders are so well stocked with good



Photo by N. Y. Zoological Society

This striped creature is a chipmunk. Of course his relatives are not all so tame as he is, but their natural curiosity makes them less timid than many of the smaller animals. When disturbed, a chipmunk will dash to his hole or up a tree as though he were running for his life. But he usually turns around again to take a look at the intruder, and sometimes to give a piece of his mind in no uncertain terms!

BEASTS THAT GNAW FOR A LIVING



Photo by N. Y. Zoological Society

Here is a family of prairie dogs playing about the entrance to their home. One sharp bark from the sentinel

they have posted, and all the funny little animals will pop back into their holes!

things that they will have plenty to eat until spring comes round again.

The striped chipmunk of the United States is the best-known of these little rodents. Its smart fur coat is marked with a black stripe down the middle of its back and a white stripe bordered with black on either side. Sometimes called the hackee or ground squirrel it has several relatives very much like itself all up and down the country, as well as some over-seas cousins in Siberia.

Out on the western prairies are a number of busy little burrowing animals in striped coats, usually called striped gophers. Like the chipmunks they store up quantities of food for the winter, and carry their provisions home in their large cheek pouches. They have a funny way of standing bolt upright on their hind legs, snuffing the breeze, and surveying the country round. They won't move until you are within a few yards of them; then suddenly with a shrill squeak of annoyance and a flourish of tails, the queer little animals drop on all fours and dive into their holes.

But the prairie dogs are the most amusing of all. They are such funny, fat little beasts, with such funny ways, that it is always a joy to watch them as they bustle

about intent on most important business in their "dog towns" on the western plains.

Prairie dogs are bigger than chipmunks, and exceedingly plump and prosperous-looking. Their legs are remarkably short, their tails very short and flat, and they are all dressed alike in smooth, grayish-brown coats. Hundreds of these little animals will live together in a big "dog town," and the plains are often dotted for miles with the mounds of earth which the industrious workers have thrown up outside their burrows. Every prairie dog has a little hillock of his own, composed of the earth he has scraped out to make his underground dwelling. There, on the top of his hill, he loves to sit when resting from his labors, and gaze solemnly out



Photo by Nature Mags.

The chipmunk is an energetic little creature. He is always scampering about in search of food. He sometimes travels quite a distance to find it, and then carries it back to his storehouse in his cheek pouches.

on the world. All around about the town the ground is often stripped almost bare, for prairie dogs feed on grasses and grass roots, which they nibble and gnaw with their long chisel teeth.

Each animal has a home of his own, but all the inhabitants of a colony are very friendly together. The young ones scamper about, jerking their tiny tails and yelping with excitement. While most of the grown members of a colony are busily working, scraping out their burrows or carrying supplies of roots and seeds indoors, one or two

BEASTS THAT GNAW FOR A LIVING



Photo by American Museum of Natural History

These are common American marmots, which are more generally known as woodchucks or ground hogs. They

are fat, lazy creatures, who are often found sitting on their doorsteps but seldom waddle far from home.

older ones are always on sentry duty. Mounted on their hills, which make excellent watch towers, they keep a sharp lookout all round. If an enemy approaches the town he is certain to be spied by the bright eyes of one of the watchers and a sharp "yap!" sends all the population hurrying indoors.

Prairie dogs bark when they are alarmed or excited, but when they are chatting together they make little chirping, whistling sounds. Quite a crowd of the funny little things will often assemble together and nod and chatter just as if they were holding a meeting to discuss some important question connected with the town—and perhaps they are, who knows?

Prairie dogs are sometimes called prairie marmots, but the true marmots, although very much like their cousins of the prairies, have no cheek pouches in

which to stow away their food. The Alpine marmot lives in colonies in the Alps, Carpathians, and Pyrenees, where it is so bitterly cold a greater part of the year that the little animals often stay in their burrows from the middle of Sep-

tember until the beginning of April. When they retire for the winter the marmots are so ridiculously fat that they can hardly waddle, for the queer little animals have been stuffing themselves with food all through the warmer days. They store quantities of grass and roots in their burrows but not enough to last them for six or seven months. So when the marmots have eaten

up all their supplies they go to sleep, and they sleep so soundly that if you dig them up you would think they were dead. The little animals are cold and stiff, their hearts beat very, very slowly, and they scarcely seem to breathe. But they are



Photo by N. Y. Zoological Society

On the second day of February the ground hog, it is said, wakes from his winter's nap and goes out of his house to see what things look like. If he sees his shadow, he jumps right back into bed again and stays there for six weeks. But if the sun is under a cloud, he gets up for good, since he knows that spring has come. How simple the weather man's job should be on February second!

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quite all right, just the same, and if left alone will wake up when the right time comes, scrape away the grass and earth with which they closed their burrows before they went to sleep, and come out into the world again. This deep sleep is called hibernation (hī'bē-nā'shūn). It is a state in which several northern animals, such as the bear and the raccoon, pass the coldest months, for in this torpid condition they do not need food.

The Lazy Woodchuck

The woodchuck is one of the marmot family. He is often called the "ground hog"—and deserves the name, for he is very much of a pig, and a lazy one too. He eats and sleeps and eats again while the summer lasts, and then tucks himself up in his hole and hibernates, as other marmots do.

The woodchuck is a fairly big fellow with short legs and a rather short bushy tail. He dresses in a thick fur suit of quiet colors, yellowish-gray, rusty-brown, and black all mixed, and looks as if he were wearing black socks and gloves. He is not so sociable as the Alpine marmots. He lives alone for the most part, though for a time he may be seen pottering about with his mate. As for his children, he will not be bothered with them! The little woodchucks are often turned out of doors to do the best they can for themselves when they are only a few weeks old. The tiny creatures are most independent, however. They take shelter in old hollow logs or trees, or creep into holes in old walls until they are strong enough to dig burrows for themselves.

Once he has dug out his burrow the

woodchuck has nothing more to do but enjoy a life of ease and plenty. But he works away in a desperate hurry while he is making his underground home. He digs it well and deep, with a comfortable roomy chamber at the end of a tunnel, and he usually makes several passages with openings in different directions. Then, after he has finished his task, he ceases from his labors and seldom bothers himself with enlarging or altering his home in the fussy way so many little burrowers have.

Woodchucks do not all live in the woods. Those that do are not so fat, and have to bestir themselves more than other woodchucks in order to find enough to eat. In the thick hemlock and pine woods they wander about eating berries, green shoots, and young pine cones, and in early autumn they enjoy a feast of mushrooms now and then. Since they are not so well fed they are not able to sleep quite so long as their brothers that live in fields and cultivated lands. They are obliged to get up and look for something to eat quite early in spring. Sometimes they make their appearance before the winter snows have melted away.

The Easy Life of the Pasture

The lucky woodchuck that settles outside the wood is surrounded by food such as he loves. He eats the clover in the pastures, strips the beans of pods, leaves, and all, munches young ears of corn and young pumpkin vines, visits the orchards and helps himself to fallen apples and fruit of all kinds—no wonder he waxes fat and lazy! He begins the day by breakfasting at sunrise, eat-

ing till he can eat no more. Then back he goes to his burrow to rest until it is time for luncheon. About noon he makes another hearty meal, and maybe he takes a sunbath outside his doorway or stretches



The striped gopher has a tan coat with dark stripes.

N. Y. Zoological Society Photo

BEASTS THAT GNAW FOR A LIVING

out on a log. Late in the afternoon he takes his last repast, and goes to bed feeling comfortably full and contented!

Of course he has his enemies. Foxes are very fond of a fat woodchuck for supper, and will dig him out of his burrow in the winter, when the ground is not too hard with frost, and kill him in his sleep. Sometimes they try the same game in summer, but then they have an unpleasant surprise. For a woodchuck will put up a good fight and bite an intruder sharply in the nose as soon as a head is poked inside his door.

The last and most famous member of the squirrel tribe is the beaver. You can tell that he is a gnawing animal by his big chisel teeth, which are a bright orange-red in color. But he does not look at all like a squirrel, in spite of the fact that the squirrels are the beaver's nearest relatives. He is one of the squirrel tribe who has taken to a life in the water—just as the otters are water animals belonging to the weasel tribe, and just as the muskrats are first cousins to the common rats and mice.

The Busy Beavers

The beaver is the largest gnawing animal in North America. He is twice as big as a woodchuck, and like that lazy rodent has a thickset, heavy body and very short legs. But here the resemblance ends, for the beaver's hind feet are very large and have webs between the toes, while his tail is broad and flat and covered with horny scales in-

stead of hair. When swimming, the beaver uses his hind feet as paddles and his scaly tail as a rudder to steer his way through the water. His forepaws, which are not webbed but have strong and fairly long claws, are used for digging. His hind feet have claws, too, and two of the toes have a double claw called a "combing claw." This

the beaver uses to comb out his silky hair when he is making his toilet.

Years ago beavers lived and worked in the streams and rivers throughout Europe and nearly the whole of North

America. But, sad to say, the poor peaceful animals have been so cruelly persecuted and trapped for the

sake of their beautiful fur coats that now in Europe they are almost extinct, while in the United States and Canada, where they once lived in large colonies, they have been forced to seek safety among the hidden streams and backwaters of the wilder parts of the country. There they have

some little chance of escaping the trapper and hunter.

Beavers are friendly, sociable animals. They like company, and when allowed to live in peace several families will together establish quite a large beaver village on the banks of some secluded forest stream. All the members of the community combine to make their settlement safe and convenient, but each separate beaver family has a private cabin—or "lodge," as it is called—which the owners build and keep in repair for themselves.

A beaver lodge is no mere hole in the banks



Photos by Bureau of Biological Survey and American Museum of Natural History

The beaver is extremely intelligent, although he has rather a one-track mind. He takes time out for play only in late summer or in winter. The rest of the year he is hard at work building dams and keeping them in good condition, fixing up his house, and gathering together food for the long hard winter. To the left you can see the fine set of teeth with which he cuts down trees and breaks up branches. Notice his wide flat tail, which he uses as a steering rudder while he is swimming. When an enemy appears, one "plop" of a tail slapped upon the water serves as a warning for the whole beaver community.

BEASTS THAT GNAW FOR A LIVING

of a stream. That sort of thing may do for a water rat but not for a skillful workman like the beaver. After carefully choosing a site for his home on rising ground by the waterside, he first burrows through the soft earth and makes a sloping tunnel, with one opening under water and another at the top of the bank. Over the burrow he proceeds to build up a great pile of sticks and sod and moss until he has erected a hillock some four feet high and twenty feet or more around at the base.

Father, mother, and all the little beavers—if there are any—take part in the work. They work mostly at night, with no tools to help them except their own claws and their marvelous chisel teeth. They cut down saplings, gnaw them into convenient lengths, strip off the bark, and push and pull them into place. They collect dead branches to add to the pile, grub up great armfuls of sods and moss to stuff into all the chinks, and finally plaster the whole affair with a thick layer of mud.

The Clever Lodge of a Beaver

But this is only the roof of the house. Underneath the woodpile at the top of the sloping tunnel the beavers dig out a large vaulted chamber about two feet high in the center and five or six feet across. This is the living room and bed chamber. Its floor is carpeted with chips of wood and bark. Here the little animals can be as cozy as they please, and safe from prowling foxes and wolverines, for none of those animals can break through the thick strong walls. There is no doorway to the lodge up above. When

they want to leave the house the beavers pass up and down the sloping tunnel straight into the water without having to set foot above ground. Two, sometimes three, passageways lead down to the water. Then, if an unwelcome visitor, such as an otter or a mink, should chance to find its way up one of the tunnels, the beavers can hastily escape down another.

A beaver lodge is a splendid piece of work. Yet far more wonderful is the way in which the clever little animals make sure that their homes shall always be surrounded by plenty of water, and never left high and dry even in times of drought, when most

of the forest streams have dwindled to mere trickles.

To accomplish this the beavers build a dam

across the stream to hold back the water

--just exactly as human engineers would

do. The dam is made of wood and

stones all piled up to form a strong, wide

barrier from one bank of the stream

to the other, and every

hole and crevice is filled

up with mud and sod to keep the water from leaking

through. The beavers are al-

ways at work on this dam, repairing it, strengthening it, adding to it. Across a small, sluggish stream they make the dam straight; but where the stream is wide and swift, the barrier is curved to withstand the force of the water.

How hard the busy folk in the beaver village have to work to do all this you can well imagine. No wonder we speak of being "busy as a beaver"! When they have collected all the driftwood, used up all the fallen boughs and old logs near by, and cut down all the saplings growing on the banks of the stream, they are forced to go further inland to find fresh material for their dam. Then after felling the trees, gnawing all round the trunk with their chisel teeth, stripping off



Above is a tree which the beavers are cutting down to use in making their dam. Only think what a lot of gnawing it takes to cut through the hard wood! To the right is a canal which the beavers have made to float the heavy logs down to their dams. It saves having to push and pull and tug the tree trunks over the ground.



Photos by Visual Education Service, U. S. Bureau of Biological Survey

BEASTS THAT GNAW FOR A LIVING



Photo by Bureau of Biological Survey

Our beaver is adding the finishing touches to his mansion. He has built it along a shore or on a tongue of land projecting into the water, and has made it of sticks and twigs cemented together with mud. Its

one or more entrances are below water, but the rooms themselves are built far enough above the water to be snug and dry all the year round. There is usually one bedroom and one storeroom.

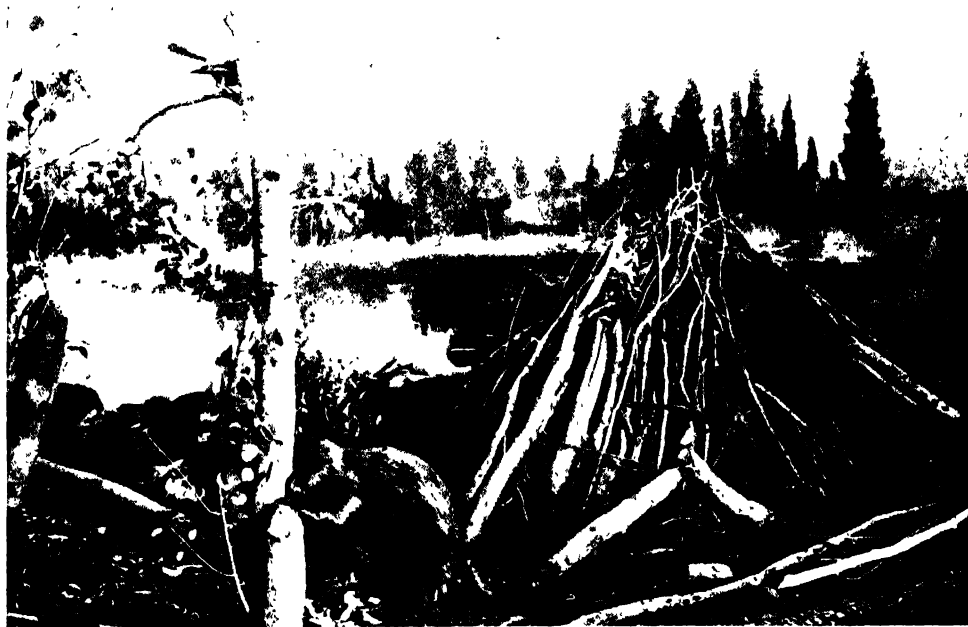


Photo by American Museum of Natural History

Here is another busy beaver working on his house. These animals are very clever about building their dams so that the water is below the level of their

rooms but high enough to hide the entrances to their houses. When a flood is threatened, the beavers break the dams down so that their houses will not suffer.

BEASTS THAT GNAW FOR A LIVING



Photo by U. S. Bureau of Biological Survey

Patiently nibble by nibble, the hard-working beavers felled each one of the saplings whose trunks you see above. Then they stripped off the bark, and by hook

or by crook got the logs down to the stream—there to make them into this workmanlike dam. A plentiful use of mud and sod made the whole thing water-tight.

the bark, cutting off the branches, and gnawing the trunk into logs, they have to roll, pull, and push the wood down to the water. Sometimes to save so much labor the beavers dig channels in swampy ground and float the wood down to the stream! Even the stripped bark is not wasted. The beavers eat that.

When the dam and the lodges are all finished the beavers have little to do for the rest of the summer months except keep their village in good order. So they take a little holiday, swim about in the water, potter round on the banks, and feast on lily roots and fresh green twigs and bark. This easy time does not last long, however, and the beavers are soon busy again cutting down slender birch tree, poplar, and cottonwood in order to make sure of a good supply of bark for the winter.

Soon the nights begin to grow cold. Gradually the stream is frozen over. The forest is silent under a mantle of snow, and only a number of small white mounds on the banks of the stream mark the beaver lodge. But the wise little people are safe and comfortable at home. The winds may howl and the blizzards may rage, but they are warm enough inside, and the plastered mud on the

roofs of their houses is frozen so hard that neither lynx nor wolf nor wolverine can break through.

But the beavers can go out when they like. They do not have to stay indoors all winter. The stream is frozen over, it is true, but the lower ends of their tunnels are well beneath the ice, so they can slip out into the water to fetch in a supply of twigs and branches from their sunken woodpiles, or go for a little swim under the ice and maybe have a little chat with their neighbors now and then—and all in perfect safety.

So the winter passes, and when spring comes back again there are sure to be three or four soft, furry babies in almost every beaver lodge. They are kept at home for the first few weeks, and then on a mild spring evening their mother leads her new little family through the tunnel out into the water, for their first peep at the outside world. They can soon swim about by themselves and play on the banks of the stream. And they learn to know that if one of the villagers gives the water a smart slap with his tail, they must dive into the stream and make for home without a moment's delay, for that is the signal with which beavers warn one another that an enemy is approaching.

MAMMALS

Reading Unit No. 12



RATS AND MICE AND THEIR COUSINS

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

Why it is best to leave porcupines alone, 4-378
Giant capybaras and alert agoutis, 4-378-79
Where chinchilla furs come from, 4-379
Pocket gophers, 4-379-80

Rats and mice that hop and jump, 4-380
Why the muskrat is protected by law, 4-380-82
The troublesome rats and mice, 4-382-84
Rabbits and hares, 4-384-88

Things to Think About

What often happens to animals that kill and eat porcupines?
What enables a kangaroo rat to make a long jump?
Why have muskrats been able to survive in spite of the fact that they are hunted?
Why are rats considered pests all

over the world?
How have rats been spread over the world?
On what do cottontail rabbits live?
Why are some hares white in winter?

Picture Hunt

Why would an agouti be hard to catch? 4-379
How did the pocket gopher get its name? 4-380
What helps us recognize a porcupine? 4-381
Where do we find muskrats? 4-382
How far can a jumping hare jump

in one leap? 4-383
Why are ropes which tie a boat to a dock often protected with round metal disks? 4-384
Where does the chinchilla live? 4-385
What method of escape is often used by hares? 4-388

Related Material

In what way does a muskrat's home resemble a beaver's? 4-374-76
From what animal is "nutria" fur

obtained? 9-89, 4-*382
How is the felt that is used in hats made? 9-89-90

Summary Statement

The cousins of the beavers are all alike in having chisel-like teeth for gnawing. Some are hunted for their valuable furs. Others, like the porcupine, are usually left

alone because of their sharp quills. Rats and mice have become pests of civilization. The whole world has declared war on them.

RATS AND MICE AND THEIR COUSINS

The Brazilian porcupine, at the right, spends most of his time in trees. He has very coarse, closely-set quills and a tail which he can use in climbing.



Photos by N. Y. Zoological Society and Nature Magazine



This poor pup has learned his lesson, and will probably keep away from porcupines in the future. In the meantime he had better run to his master and have those painful quills removed from his nose and mouth.

RATS AND MICE AND THEIR COUSINS

Porcupines, Agoutis, Chinchillas, Hares, Rabbits, Rats, Mice, and All Their Kin Who Gnaw Their Way through Life

ALL about us in forest and farm and lawn, and even inside our very houses, live the interesting little "gnawers" that we call "rodents" (rō'dēnts). What an adventure it would be to go as guests to their homes, to sit in the beaver's parlor or dine off nuts with the squirrel! There are so many different members of the tribe to call on that we shall only have time to give a passing glance at a few of them, though in another place we have told you about the squirrels and beavers and some of their relatives.

Now there is the porcupine, for instance—one of the strangest of chisel-toothed folk, whose back bristles with an armory of long flexible quills and shorter pointed spines, warning one and all to keep at a distance. He is rather dull and grumpy but not a bad old fellow, though he does appear so alarming when he stamps his feet and rustles his quills at you.

The Canadian porcupine lives in a hollow

log or in a hole in the rocks, and when he is not sleeping curled up with his quills sticking out all round him, he goes grubbing for roots and looking for bark and twigs. His quills lie down flat on his back as he potters around, but if he is attacked, up goes his prickly armor and he charges full tilt at his enemy. The long quills do not do much harm, but the shorter spines are sharp and barbed, and the foolish beast who tackles one of these prickly gentlemen is often terribly punished for its rashness. A hungry lynx or some other big hunting cat will sometimes kill a porcupine, but the hunter himself may die not long afterward—killed by the cruel spines that have pierced his lips and his tongue, and which all the rubbing in the world cannot remove. Leopards and even tigers are sometimes killed in the same way by the spines of porcupines in the Old World.

The largest rodent in the world is the capybara (kăp'y-bă'ră). It is nearly as big as a small sheep, and lives by the riverside

RATS AND MICE AND THEIR COUSINS

in tropical South America, where it spends more time in the water than out of it. For this reason, perhaps, it is often called the water hog—but it is a gnawing animal, as its front teeth prove. The capybara belongs to the guinea pig family, and like the funny little guinea pigs has not even the stump of a tail to boast of.

In South America, too, the nimble agouti (*â-gôo'tî*) wander about at night in little troops of twenty or more, and are hunted by jaguars, ocelots, and other fierce creatures of the forests. The agouti is a slim, quick little animal about the size of a rabbit. It is always on the alert, as well it may be. Even when sitting upright nibbling a green leaf, which it holds in its front paws, the wary agouti keeps turning its bright eyes from side to side, ready to dart away at the first sign of danger.

The pretty little chinchilla is another native of South America. It is famous for its beautiful pearly-gray coat of softest, silkiest fur, for the sake of which the poor little animal is constantly hunted and killed. The chinchilla lives in large colonies on the high mountains of the Andes. There its warm fur coat protects it from the cold air. Although it burrows in the ground it is most careful to keep its soft coat spotlessly clean and tidy, and to shake and comb out every speck of

earth that it finds clinging to it anywhere.

Chinchillas are busy little folk. They cut down all the green things growing near and stuff up their holes with them; and they have a funny habit of collecting all sorts of odd things that cannot be of the smallest use to them.

Boots, whips, and watches, lost by travelers, may often be found scattered round the entrance to a chinchilla's burrow!

By far the largest tribe of gnawing animals are rats and mice; to it, besides the true rats and mice, belong hundreds of queer little mouselike creatures. North, south, east or west, no matter where we travel we are sure to meet some of this enormous army of rodents.

On the plains and prairies of the western states, the odd little pocket gophers are forever at work digging out their underground tunnels, which in some cases would measure a mile or more if they were straightened out. These little miners are called "pocket gophers" because of the large pouches they have in their cheeks. These open outward, like true pockets, one on each side of the mouth. In these convenient receptacles are carried the roots and seeds which the animals stow away in their storehouses.

The gopher lives most of his life in his underground towns, working away at a furious rate. He grubs in the earth

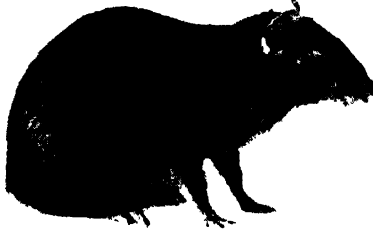


Photo by N. Y. Zoological Society

The capybara is the largest of the rodent family, for he is about four feet long. These animals live in the great rivers of South America, and in spite of their size can swim as well as a water rat.

Here is the nimble agouti, who lives in the dense tropical forests of South America. It is said that he can jump six feet into the air, to land right on top of any little animal he happens to be fighting with.



Photo by N. Y. Zoological Society

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with his little nose and scrapes and shovels with all his four feet at the same time—kicking and pushing the loosened soil behind him as he goes. Then, as soon as a small mound of stuff has accumulated in the rear, the little miner whisks round and turning himself into an animated wheelbarrow by joining his forepaws together in front of his nose, he trundles along his tunnel, pushing the earth before him, and dumps the load out of doors.

Out on the western plains, too, the queer

outside their burrows in the sunshine on sandy plains in many of the warmer Old World countries, and skip and gambol together like a troop of wee acrobats after the sun goes down.

The jumping hare you might mistake for a real hare until he bounds

off in a hurry on his hind legs, holding his tiny front paws against his chest.

When chased by a black-backed jackal he leaps from ten to twenty feet at every bound, and provided he has a good start, he soon leaves his old enemy behind.



Above is a pocket gopher. He doesn't get his name from the fact that he is small enough to be put in your pocket, but from the two pouches which Nature thoughtfully gave him as baskets in which to carry food.

Photos by Cornelia Clarke, and N. Y. Zoological Society



This fascinating little creature, which looks like a cross between a kangaroo and a mouse, is a jerboa from the sandy wastes of Egypt.

His front paws are so tiny that they are quite hidden in the picture.

kangaroo rats throw up low hillocks of sand over their underground nests and passageways, and come out at night to hop and skip about on their long hind legs like a lot of absurd little kangaroos.

In the more northern states wee jumping mice spring from the grass in the meadows, under your very feet, and go leaping and bounding away, their astonishingly long tails streaming behind them. They are timid little things that like to nibble the grass seeds.

Both the kangaroo rats and the jumping mice hop about in this way because their hind legs are so very much longer than their front ones. And across the seas their cousins the jerboas and the Cape jumping hares have the same peculiarity. The jerboas, small rat-like creatures with long tufted tails, bask

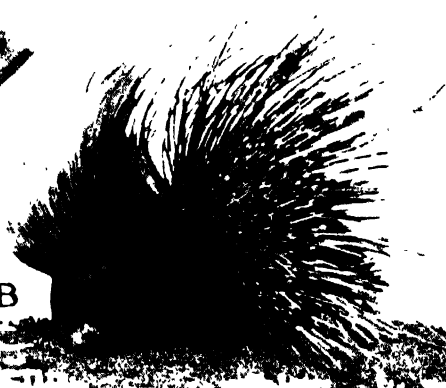
Many rodents belonging to the rat tribe are capital swimmers and will often plunge into water to escape from their enemies. Some kinds of rats and voles prefer to live altogether in marshy places, where their feet are seldom dry; while others make their homes in the banks of streams and rivers, where they may enjoy a bath whenever they feel like it.

Largest of the water voles is the North American muskrat, or musquash, as he is sometimes called. This big fellow is over a foot in length, and is more like a beaver than a rat in many ways—though he never builds dams across the streams. He has a fine fur coat of his own of a rich, shining brown, and in consequence the harmless little waterside dweller is trapped and killed to supply coats for other people. His hind feet are webbed for swimming, and his tail is

RATS AND MICE AND THEIR COUSINS



A. The Canadian porcupine hasn't a tail long enough to help him in climbing trees, as his Brazilian cousin has. But he gets on quite well without it, and uses what tail he has as a weapon. C. This albino, or pure white, Canadian porcupine is a brother of the one you see at A.



B. The crested porcupine comes from the Old World. He is a sturdy, heavy animal, and has long slender quills decorated with black and white rings. Among these are shorter quills. The crest from which he gets his name is made of long stiff hairs and sharp spines.

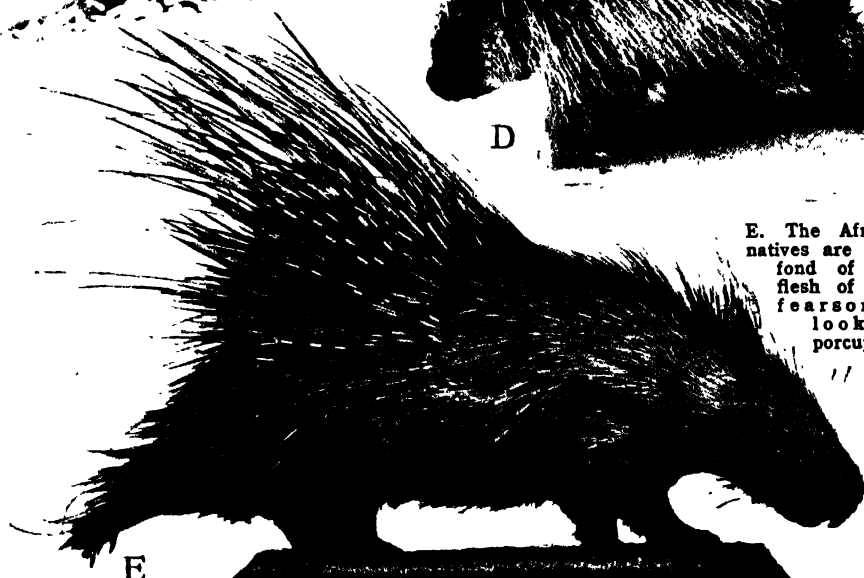


C



D

E. The African natives are very fond of the flesh of this fearsome-looking porcupine.



E

Photos by N. Y. Zoological Society and American Museum of Natural History

RATS AND MICE AND THEIR COUSINS

scaly and compressed sideways to act as a rudder. On his flanks he carries two little flat bags, or pockets, containing a strong, musky scent.

Although they are trapped for the sake of their skins the muskrats are not so fearful of man as the poor persecuted beavers. They often establish their

colonies on the banks of rivers quite close to a busy town and do not seem at all to mind the coming and going of human folk so near their settlement. And however many of the animals are killed, life in a muskrat town still seems to go on without the population growing very much smaller, for muskrats have so very many children that there are always numerous young ones growing up to fill the ranks of those who fall victims to the trapper. Yet even muskrats would die out in time if they were persistently killed in this relentless fashion; so to prevent this the little water folk are now protected from their enemies by law in many parts of North America.

On the banks of streams the muskrats live in burrows in the bank. They dig out roomy living rooms and sleeping apartments, which they enter by tunnels sloping down to the water. But on flat marshy ground the clever little animals erect lodges of sod, reeds, and mud much as the beavers do. The cabins often boast two spacious rooms, one above the other, with the lower apartment frequently half under water, while the upper one is always dry and comfortably lined with soft moss and grass.

In these cozy nurseries the young muskrats are reared, and there with their parents they pass a good deal of their time in winter, all

coiled up asleep together. Now and then they wake up and slip downstairs and out into the water. There, under the roof of ice, they take a little fresh air and exercise. Perhaps they can even dig a fresh-water clam from the mud.

In summer they love to swim and float in the cool deep water, or to grub up lily roots and sweet flags and carry them to the bank, where they nibble away at them with great enjoyment. Then in the autumn many of the muskrats wander away from the colony to start house-keeping on their own account. After roving round for a bit they settle down to work, and dig burrows or build cabins where they and their partners may spend the winter secure from the frost and snow.

In South America the coypu (koi'pōn) rats take the place of the muskrats and beavers of the north, though, strange to say, these water folk are more closely related to the prickly porcupines than to the rats and mice.

Coypus are large and very funny-looking animals, with melancholy faces and bunches of stiff whiskers drooping like moustaches round their mouths. They mostly live in pairs in burrows on the banks of lakes and rivers, though in the evening two or three couples often meet together and uplift their voices in a weird and mournful chorus. Large families are the rule with these queer animals, and one may often see the mother coypu swimming round with eight or nine babies riding on her back.

As for the true rats and mice, there are legions of them all the world over. Rats are decidedly unpopular with most people, and there is certainly little to be said in favor of the common brown rat that plagues the farmers by eating grain, by carrying off eggs, young ducklings, and chickens; and by gnaw-



Here is the kangaroo rat, who gets his name from his long hind legs with which he leaps over the ground much as a kangaroo does.



The fuzzy animal clinging to the log is a muskrat. He lives on the borders of lakes and rivers or in marshy places of the Northern United States and Canada. To the right is his South American cousin, the coypu, who is also a good swimmer and very fond of ponds and rivers.



Photos by N. Y. Zoological Society

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ing and undermining outbuildings. Brown rats will gnaw anything, cloth, leather, plaster—they don't care what it is—and make themselves a complete nuisance wherever they are. And, worse still, rats are germ carriers and sometimes infect man and domestic animals with bad illnesses.

What makes the behavior of the brown rat especially annoying is that he has no business in America at all. He is an immigrant who came over from Europe years ago with his wife and his children and all his friends and relatives. They arrived by boat and soon spread themselves all up and down the country, and in spite of all we do we cannot get rid of the invaders. Rats and mice have so many children, and the young ones grow up so quickly and have so many more children in their turn, that it is impossible to drive them out of the country altogether, although a great deal is done to keep the rat population down, both in America and in England. Yet they come, whatever one does. Every cargo from Europe brings with it a fresh contingent of stowaways on board. They slip ashore as soon as the boat puts in to port and make themselves at home in their adopted land.

The wood rats, cotton rats, rice-field rats, and other country cousins of many kinds are not so destructive, although they will always gnaw and nibble grain of all sorts wherever they find it. They are interesting little rodents, too, while black rats and white rats are

highly intelligent and make most entertaining pets.

Mice, on the whole, do not bear such bad characters as rats, though the house mouse, who is another foreign settler that first came over from Asia ever so long ago, is certainly a thorough little nuisance when it insists on being given free board and lodging in our houses.

Yet the little gray mouse is such a pretty little creature, with such taking ways, that he is often forgiven for the mischief he does.

To see him sitting up and washing his face with his tiny paws is one of the most charming sights. He is

fond of travel and is always getting off on his journey by boat or train and turning up serenely in a new part of the world, where he finds his way into someone's house and makes himself at home.

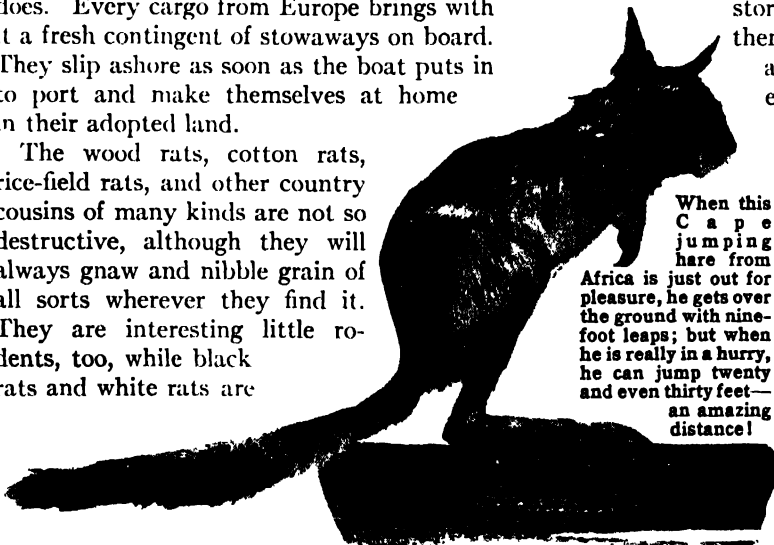
The little country mice are quite as troublesome to farmers as their cousins are to city dwellers. They have no respect for other people's property and are always raiding barns and storehouses and helping themselves to seeds, roots, and corn. There is no end to these pretty little nibblers.

There are long-tailed mice, short-tailed mice, brown, red, gray, and parti-colored mice; every hedgerow, field, meadow, and wood has its mouse population. Yet we see very few of them, for the tiny gnawing creatures are timid little folk. They live in runs and nests and burrow in the ground



Photo by N. Y. Zoological Society

Here are the Tweedledum and Tweedledee of the rodent family. They are Branick rats, from South America, and have short furry tails instead of the long scaly tails of common rats.



When this Cape jumping hare from Africa is just out for pleasure, he gets over the ground with nine-foot leaps; but when he is really in a hurry, he can jump twenty and even thirty feet—an amazing distance!

Photo by American Museum of Natural History

RATS AND MICE AND THEIR COUSINS

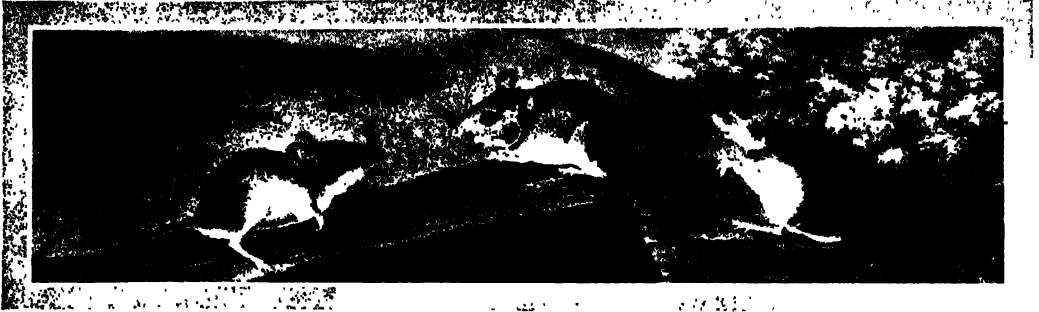


Photo by N. Y. Zoological Society

Have you ever seen baby mice walk? It is just as if the tiny creatures were on wheels! Since you cannot see their feet move, they seem to be rolling across the

or under the grass, and seldom venture out into the open until it begins to grow dark.

The white-footed mouse that lives in the woods is one of the most charming of all American mice. It has a golden-brown coat, which in winter time is very thick and glossy, a snowy white waistcoat, dainty white feet, and the most beautiful big dark eyes.

Little white-foot is a harmless little beastie. It seldom leaves the shelter of the woods, but makes its nest of grass and leaves in holes in the roots or low branches of the trees, and feasts on the seeds and berries growing roundabout. It climbs nimbly about the bushes to gather the rose hips and berries of all sorts, and lays up stores for winter, when it is often forced to stay at home for days or weeks at a time. Several white-footed mice often pass the winter together in a hollow tree or a deserted

woodchuck's burrow; and there they doze and wake and nibble the good things they have collected until brighter days come again.

Many mice make most charming little nests. The tiny English harvest mouse, which is so small that six of them weigh only an ounce, weaves its globular nest of

floor. Above are some dainty little white-footed mice. They are not pests like the house mice, for they live in meadows and woods.

split straws and grass, and slings the finished dwelling high between two or three tall corn stalks. The parent harvest mice do not live in this nest. It is a cradle for the baby mice, which curl up snugly inside and are rocked to sleep as the corn sways in the summer breeze.

Of course every one has heard of the sleepy dormouse, who would keep falling asleep at the Mad Hatter's tea party in "Alice in Wonderland." The dormouse's nest is a large and rather untidy-looking ball of grass tucked into a large bush or hedgerow. Each dormouse makes one for himself and spends the winter in the middle of it sound asleep with his tail curled over his tiny pink nose. The dormouse is a native of England and many parts of Southern Europe. He is not a true mouse, but in some ways is much more like a tiny squirrel.

After the mice and rats the "most familiar" of all the little gnawing animals, as old Uncle Remus would say, are the hares and rabbits—the coy little cottontails of the woods, "bred and born in a briar patch," and the saucy jack rabbits that speed like the wind over the open plains.

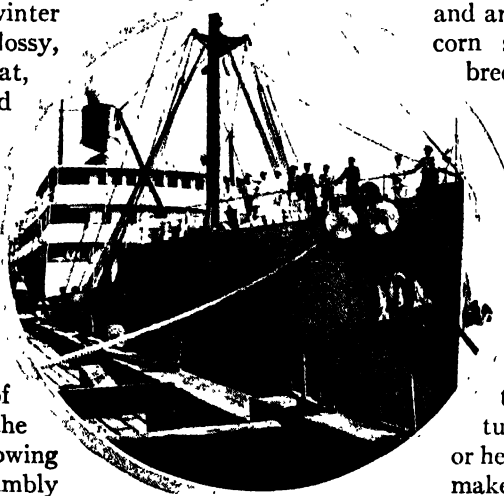


Photo by American Museum of Natural History

The rats which have become such pests all over the world have largely been distributed by ships. Rats from one country would board a ship by means of her chains and ropes, and when the ship touched port they would invade the new country in swarms. The ship which you see above has been equipped with rat guards, or metal disks, over which rats cannot climb—to bring disease on board.

RATS AND MICE AND THEIR COUSINS



A. Here is the water vole, or water rat, who lives in banks of streams and lakes. He is a good swimmer and diver, and builds the entrance to his home well below the water line. Since muddy water is not very good for bathing, the vole often sits up on his hind legs and cleans himself, much as a cat does.

B. This is the hutia, a tree rat from Cuba, where he lives in the forests. He is an excellent climber.

D. The spotted cavy of South America lives by lakes and rivers. The natives often keep them as pets and let them run about quite freely, like a cat or a dog.

C. The pretty little chinchilla looks rather like a squirrel. It lives high up in the Andes Mountains, where it hides in rock clefts during the daytime and comes out to scuttle over the rocks at night. At E is a feather-tailed mouse from Australia.

G. This common black rat has in some places been driven out by the brown rat. But that is no help at all, for the brown rat is much more objectionable than his black cousin.

F. Here is the kangaroo rat in his sandy home.

Photos by James's Press Agency, N. Y. Zoological Society, American Museum of Natural History, and the Australian Gove

RATS AND MICE AND THEIR COUSINS

Hares and rabbits abound in all parts of the world. They are all alike in having long hind legs and stumpy white tails and are all distinguished from other gnawing animals by having four, instead of two, chisel teeth in both jaws. For this reason hares and rabbits are called "double-toothed rodents"; but the extra teeth are very small and are fixed behind the ordinary front ones, so they are not of much use to their little owners.

Cottontails like to live where there is plenty of cover in which they may crouch down and hide from their many enemies. Gray foxes, red foxes, mink, and weasels are all fond of a plump young rabbit for dinner; while hawks hover overhead ready to pounce down on the little nibblers if they forget to "watch out." Best of all, the cottontails love a fairly open wood with clumps of pines and birches growing here and there and a thick tangle of briars almost covering the ground. Here through the briar patch the rabbits make regular beaten tracks along which they patter up and down to and from their feeding grounds. They crop the leaves, berries, and fruit and nibble the grass growing on the borders of the plantation, and if there should be any gardens near at hand they will slip in and have a little meal among the vegetables and fruit they find there.

Very early in the morning is their favorite time for feeding. So next time you are staying in the country, slip out of bed some morning before the sun is up and look out of the window. You may perhaps see a party of rabbits having their breakfast in the cool gray dawn.

"For bread and milk they eat the grass,
Their coffee is the morning dew,
They drink without a cup or glass,
They eat their breakfast where it grew
So early in the morning."



Photo by Cornelia Clarke

When the woods and fields are covered with snow and icy winds are blowing, Br'er Rabbit is not dismayed. He just curls up in some sheltered nook protected by overhanging branches, and waits for better days.

When "Molly Cottontail" wants to make a cozy nest for her babies, she scrapes a shallow hollow in the ground under the shelter of a thick bush, and lines it with leaves and grass and soft gray fur which she plucks from her own breast. She doesn't stay with her babies all the time, but when she leaves them to go out to feed or to take a little walk in the woods, she carefully pulls their fur covering well over the tiny things to keep them warm and hide them from prying eyes. They grow quickly and are soon big enough to leave their nursery. You may often meet two or three wee brothers and sisters pattering about under the ferns and brambles in the woods. They are the funniest sort of babies. They skip and gambol and stamp their little feet; stop suddenly short in the middle of the grass, sit bolt upright and gaze round with a look of much solemnity on their foolish little faces, and work their tiny mouths as if they were munching something good or repeating their lessons over to themselves.

The cottontail is also called the gray rabbit or the wood hare; and the jack rabbit of the plain is called the prairie hare. Nearly all these little wild folk have several names, so it is sometimes very puzzling to find out who they are. The varying hare, the snowshoe rabbit, and the white hare are only three different names for the same animal. "Varying hare," perhaps, suits the hardy fellow best of all, for he does vary greatly. Like many creatures who live up north he changes his coat according to the season. In the summer the hare is white underneath with a reddish-brown coat on his back, but in the winter he is white all over, so that you cannot see him when he is crouching down on the snow-covered ground. Some varying hares, who live further south where the winter does not last so long, keep a few brownish patches all the year round. Hares are wonderfully hardy folk. They

RATS AND MICE AND THEIR COUSINS

Pet rabbits do not really care whether their house is fashionable or not. They are just as happy in an old crate, provided they are warm and have room.

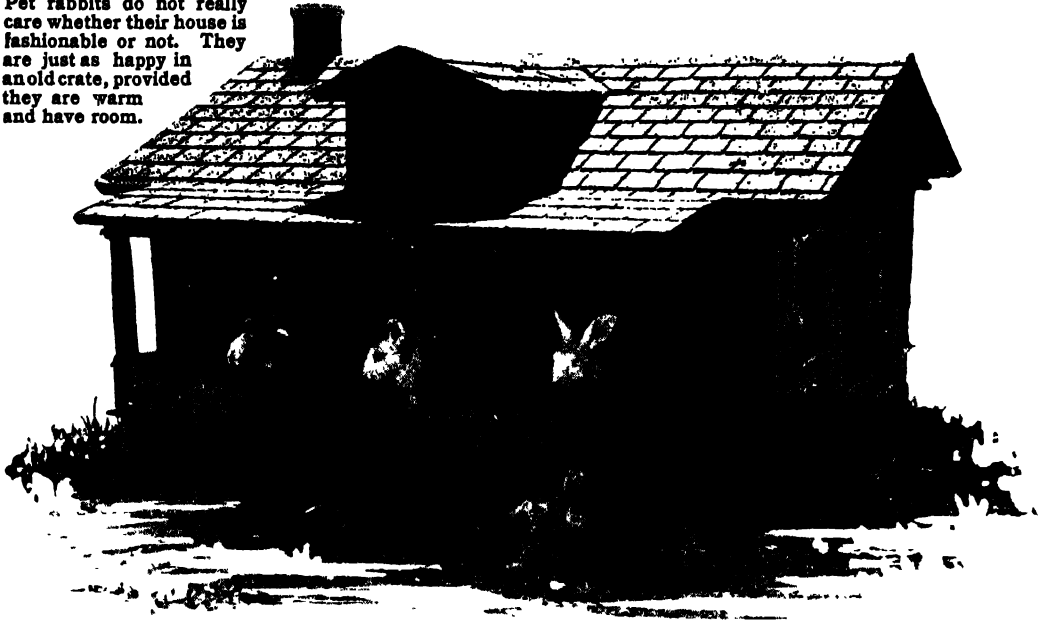


Photo by Keystone View Co

never make nests or dig burrows for shelter in bad weather or to conceal them from their foes; but each one chooses a particular spot for his home in the shadow of a clump of bushes or beneath the overhanging boughs of an evergreen tree. There he lies perfectly motionless most of the day. But Master Hare sleeps with one eye open, ready to spring to his feet and dash off in a moment if he is discovered by a hunter or a prowling beast of prey. His hind legs are so long and strong that he can flee like the wind before his enemies, who have a poor chance of catching him once he is up and away.

Baby hares have no nursery of any kind provided for them. They are left lying on the ground among the leaves and grasses with nothing but their fluffy coats to keep them warm. Their mother does not even stay with the little creatures all the time; she just visits them now and again to feed them

and see that they are all right until they are old enough to shift for themselves. Since they are never fussed over and coddled, the young hares are independent little creatures from the first, and as soon as they can stagger about on their tiny legs, they are ready to make their own way in the world.

In spring and summer the hares find plenty to eat. They feed on green herbs and young shoots of all kinds as well as on fruit and berries, but since they never make provision for the days when food is scarce, when winter comes they mostly have a very hard time. When winter storms are raging, the hare crouches in the shelter of the tangled bushes or drooping branches, where the snow makes a thick white roof over his head. He has nothing to eat for days together. But when the weather is not too bad he goes out and keeps life in his body by nibbling the bark of the



Photo by Nature Magazine

Here is a black-tailed jack rabbit. He has pricked up his ears, and in another moment will be whisking away over the plain, with his tail bobbing up and down as he goes.

RATS AND MICE AND THEIR COUSINS



Photo by Cornelia Clarke

This is not an Easter card, but a family of albino bunnies—the kind that hatch out of Easter eggs in great numbers every spring! Rabbits like these are

not native to America; they have been imported as pets. But there is one place where you will never fail to find one. Just look in any magician's hat!

young trees and bushes growing in the woods.

Up inside the Arctic Circle the arctic hare has an even harder time when the long cold dark winter sets in. There is so little shelter in these unfriendly regions that the hare is sometimes completely buried in the snow. But he stands it somehow. He probably keeps fairly warm inside his snow cabin, and if he does not fall a victim to the lynx, the gray wolf, or the wolverine, he manages to keep going until spring on such dry, uninteresting fare as lichen, stoneworts, and the few hardy arctic plants he can find by scrap-

ing away the snow from the frozen earth.

As the snow and ice never quite melt away in the polar regions the arctic hare wears his white coat all the year round. Hares and rabbits are so very much alike that they are often confused one with another. In reality all American rabbits are hares, but it is the custom in the northern states to call the bigger fellows hares and the smaller ones rabbits. True rabbits are natives of Europe; they are rather smaller than hares, and numbers of them live together in underground burrows, which are called rabbit warrens.

Here is a citizen of the United States. He is the prairie hare, who, as his name implies, makes his home on the great prairies of the West.



Photo by N. Y. Zoological Society

The hare seems to know quite well that his coat harmonizes with his background; so he often hides from his enemies just by remaining perfectly still.

MAMMALS

Reading Unit No. 13

THE WILD KIN OF THE COW

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

What happened to the immense herds of the American bison?
4-390-91
The fearless Cape buffalo, 4-392-94
Water buffaloes and zebus, beasts

of burden in India, 4-394
The useful yak, 4-396-98
The camel, ship of the desert, 4-398
The obstinate llama and its relatives, 4-400

Things to Think About

How many bison live to-day as compared with their number before the white man came to America?
How was the American bison almost wiped out?
Why is the Cape buffalo feared

by man and beast?
What qualities make the yak a useful beast of burden?
Why has the camel a hump on its back?
Why is the camel well adapted to desert life?

Picture Hunt

What once made bison hunting dangerous? 4-390
In what part of the world does the musk ox live? 4-391
Why do big-game hunters respect buffaloes? 4-393
Why has the yak a heavy coat? 4-394

What has nature given to wild cattle for their protection? 4-395
What animals in South America are related to the camel? 4-399

Related Material

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Did prehistoric man know any-

thing about wild cattle? Explain, 11-3-4

Leisure-time Activities

PROJECT NO. 1: Visit the zoo or a museum of natural history. Study the various heads and ob-

serve how horns help an animal to live, 4-395. Or find interesting pictures of the horns of animals.

Summary Statement

The American bison once numbered many millions. They were ruthlessly slaughtered. To-day we protect our wild animals by

law. Interesting beasts of burden are the water buffalo, yak, camel, and llama.

THE WILD KIN OF THE COW



Photo Copyright by Milwaukee Public Museum

When the pioneers traveled westward over the great plains, they saw many herds of these great bison. There was general rejoicing when one of the huge

creatures was brought down, for a single buffalo made a great feast. But bison hunting was dangerous, for there are few things so terrible as a stampeding herd.

The WILD KIN of the COW

All about Musk Oxen, Buffaloes, Zebus, Yaks, Camels, Llamas, and Their Cousins

WE ARE now going to talk a while about a few of the wild relatives of the placid cows that graze and chew their cuds in the meadows all through the warm summer days.

Peaceful as they are, all our valuable cows are the descendants of various kinds of wild cattle. Among these were the aurochs (*ô'rôks*), who roamed the European forests in large herds many years ago. These wild beasts, like so many other splendid wild animals, are now quite extinct; the last truly wild cow was killed about three hundred years ago in Poland.

There are still herds of wild "cows", and "oxen" in various parts of the world—in South America, Australia, New Zealand, and the Falkland Islands—but they are all descendants of domesticated cattle that escaped and went back to the wild state many years ago. In some places these animals have increased to such an extent that they now form enormous herds.

In North America there are at present no wild cattle except the musk ox, which does not belong to the ox family but is one of those puzzling hoofed animals that are neither quite one thing nor another. The musk ox appears to be half sheep and half bison, and looks more like a shaggy ram than anything else. It lives in the far north, in the barren arctic lands, where it is hunted by the Eskimo both for food and for the sake of its thick hairy hide, which makes a splendid warm covering for beds in wintry weather.

Finest of all wild oxen is the American bison, or the buffalo, as it is usually called. There are only about 20,000 of these great beasts left in the world to-day, though their number is now increasing.

In days gone by, before the white men appeared and took possession of the land, the bison were lords of the prairies. Herds of thousands, sometimes millions, inhabited the wide, rolling plains of the West; and the

THE WILD KIN OF THE COW

In spite of the fact that he is a vegetarian, the muck ox lives in the far north. Often he has to scrape away the snow to find the plants and grasses that make up his diet. Man is the chief enemy of this shaggy beast. Sometimes he is attacked by wolves, but he can usually put them to rout with his massive horns.



Photo by N. Y. Zoological Society

land was often black for miles with the solid, moving masses of these great horned cattle. It has been said that "before 1870 it would have been as easy to estimate the number of leaves in a forest as to calculate the number of living bison."

But these vast buffalo herds no longer exist. In olden days they were hunted and killed by the Red Indian for the sake of their flesh and their skin. Packs of wolves were forever on their track, killing the calves and the sickly members of the herd. The very size of the herds, too, often proved disastrous, since buffaloes are not very intelligent animals. They follow each other blindly, and if, when crossing the plains, they were held up by a broad river or a bog, the animals marching in the front ranks of the armies were forced on by the overwhelming numbers that kept pushing them from behind. In this way whole herds of buffaloes were sometimes drowned or swallowed up in treacherous bogs.

It was the construction of the great railway to the Pacific, however, that finally destroyed

the wild buffalo of the plains. The great herds were split up and scattered by the snorting steam monsters that dashed across their territory. At first the

trains were constantly being held up and even derailed by mobs of wild, terrified buffaloes; but the poor beasts were so ruthlessly slaughtered both by red and white men that gradually they were all killed off; and now you may cross the prairies from end to end without ever seeing

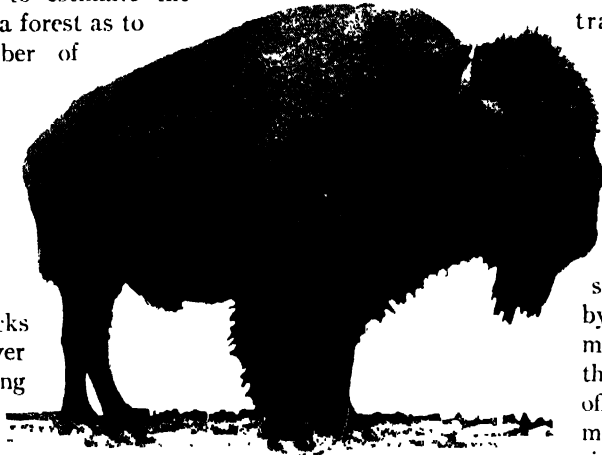


Photo by N. Y. Zoological Society

Here is the American bison, usually called the buffalo. He is a very imposing creature when met head on; but from the side he looks as though Mother Nature had been so extravagant in fashioning his head and shoulders that she was forced to economize on the rest of his body!

single buffalo.

This is a pity, for the American buffalo is a truly noble beast. His huge head and broad, humped shoulders are clothed with thick masses of black woolly hair hanging down as far as his knees and giving him a most dignified air. In winter his back and sides are covered with short, crisp, curly hair; but when the days grow warmer he sheds his thick coat in large patches, which makes him look very ragged and untidy. In summer the buffalo's skin is almost bare, and until his

THE WILD KIN OF THE COW



Photo by American Museum of Natural History

Above are two specimens of the banting, the common ox of the Malay countries. It is found in both a wild and domesticated state. Bantings are usually a bright

reddish-brown, and look as though they were wearing white stockings—though in some places the old bulls are black. The horns vary in shape and size.

coat grows again the animal is greatly tormented by biting flies that settle on his back and give him no peace. To protect his tender skin he wallows in the mire and plasters himself all over with a thin layer of mud; and this, of course, does not improve his appearance.

The strength of the buffalo lies in his great head and shoulders. When roused to anger his eyes gleam red and he paws the ground in his rage. Then with a loud bellow he charges his foe—and there are few creatures that can withstand the shock of that headlong rush!

The European bison is actually a larger animal than his American cousin, but his head and shoulders are not quite so massive, and he does not look so big and imposing. In olden days large herds of bison roamed through the forests in many parts of Europe, but so ruthlessly have they been hunted that to-day

there are only a very few of the fine animals left.

The same fate threatens the splendid Cape buffalo. Solitary bulls or small wandering

bands are all that now remain of the great herds that not so very long ago roamed at will in the reedy swamps and open "bush" of South Africa.

The Cape buffalo is a sturdy animal with big hairy ears and a huge pair of horns ending in sharp, pointed tips. At the base the horns are very wide and flat, almost meeting in the center of the forehead; they form a hard, horny helmet which no bullet can penetrate, and protect the animal's head from the teeth and claws

of other wild beasts.

So strong and bold is this monarch of the "bush" that he has no fear of man or beast. With a furious bellow he will dash from a thicket and charge full tilt at the hunters, and he will fight two or three lions all together.

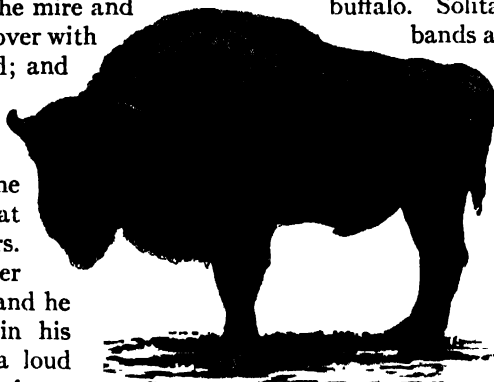


Photo Copyright by Gantier Bolton, London

The European bison, shown above, has almost disappeared, although at one time herds of these great animals must have roamed in most of the forests of Europe and North Asia.

THE WILD KIN OF THE COW



Photo by American Museum of Natural History

Indian water buffaloes—shown above—are massive animals with tremendous strength. Most people agree that, after the tiger, this buffalo is the most dangerous

of the animals of India. He takes his name from the fact that he is fond of spending much of his time up to his neck in deep pools and streams.



Photo by American Museum of Natural History

Buffalo hunting is a very dangerous sport in Africa, for when these African buffaloes charge, with lowered head and watchful eye, there is just time enough for

one quick shot. If you miss the animal, he seldom misses you! The best way to hunt these beasts is on horseback or from the limb of a tree.

THE WILD KIN OF THE COW

The lion is too wise to attack a full-grown bull buffalo, though he will follow a herd and pull down a sickly cow if he gets the chance, or carry off a calf that has strayed too far from its mother. The crafty beast is often disappointed,



In the daytime these partly domesticated gayals of Northern India roam at large, but at night they return to the villages to be fed.

however, for when a lion is prowling round, the cows will surround their calves and guard them all night long. Every time he tries to break through that watchful ring the lion is faced by such a terrifying array of horned heads that he is forced to abandon his fell intent and slink off supperless to his lair in the dawn.

In West and East Africa there are several species of buffalo, all splendid animals though not so large and fierce as Cape buffaloes. There is, too, in the Congo a dwarf buffalo with a bright red coat and small upturned horns.

The Indian water buffalo is quite as fierce and alarming as its African cousin. A big bull stands six feet high and has narrow flattened horns nearly six feet in length. Even the lordly tiger prefers to give this great beast a wide berth, for the buffalo will knock a good-sized elephant over by charging into its ribs.

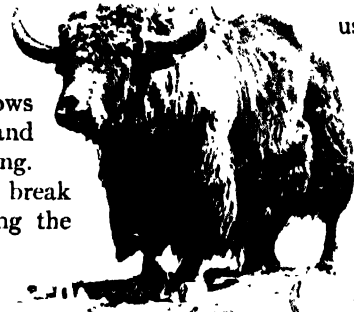
Wild buffaloes love the marshy jungles and forests, where they will lie for hours together in muddy pools chewing the cud. And a more terrifying spectacle than a herd of these huge beasts with their fierce glaring eyes when, all dripping with mud, they leave their

baths and plunge through the jungle, can hardly be imagined.

In India the natives keep herds of domesticated water buffaloes as beasts of burden, for these animals are very strong and can carry heavy loads. It is never safe to trust the buffaloes with anything very valuable, however, for they can never resist the temptation of taking a bath at any time; they will make a dash for any pool or stream they see when they are being driven along the road, to plunge with their loads into the water!

In many parts of Asia cattle are used instead of horses or machines.

In India you may see the humped zebu (zē'bū) ploughing the fields, carrying packs on its broad back, or marching sedately along the roads with a cart behind it. It works steadily and well, but it



Above, you see the yak, a strange creature who looks somewhat like a bison except that he wears a very heavy coat which falls in a deep fringe almost to his feet. To the right is the Cape buffalo from Africa. It likes to go about in herds, for then it is entirely safe from attack. Even the lion knows that he has no chance against a herd of these creatures, although he often makes a satisfying meal of the stragglers that have separated themselves from the rest.



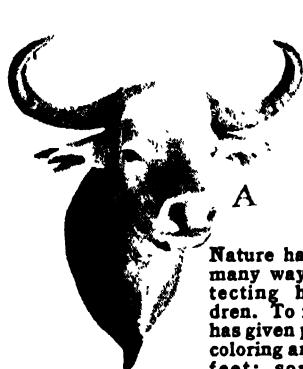
Photos by N. Y. Zoological Society

refuses to be hurried, and sometimes a bull will lie down for a nap in the middle of a narrow street and stop all the traffic until such time as it chooses to get up and go on again. Some of the white bulls are considered sacred by the Hindus, and like the sacred monkeys, they are allowed to do just as they please. They may help themselves to the fruit and vegetables on the stalls in the streets; and if one of them blocks the way by dozing in a narrow thoroughfare, no one will dare to disturb its slumbers!

Some zebus are as big as an ordinary ox, others no larger than a big dog. They have fine satiny coats, gray, brown, black, or white, and they nearly all have a tiny hump on their shoulders.

There are no wild zebus now. The gaur (gaur), sometimes called the Indian bison, is

THE WILD KIN OF THE COW



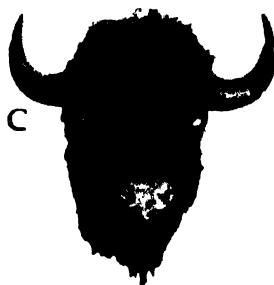
A

Nature has a great many ways of protecting her children. To many she has given protective coloring and nimble feet; some have

hard shells or sharp quills; others carry terrible claws and rending teeth. To the cattle she has given tremendous strength and sturdy horns.



B

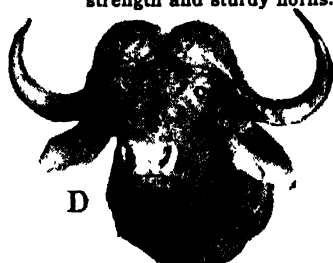


C

A. Here is the banting from Siam.

B. The horns of the Abyssinian buffalo form a heavy ridge on the top of his head.

C. This is the wood bison, who prefers forest regions to the open plains.



D

D. The Cape buffalo is better left alone unless you are a good shot, for he has a wicked pair of horns, and a very bad disposition when aroused.



E

E. The American bison has rather small horns, considering how large he is.

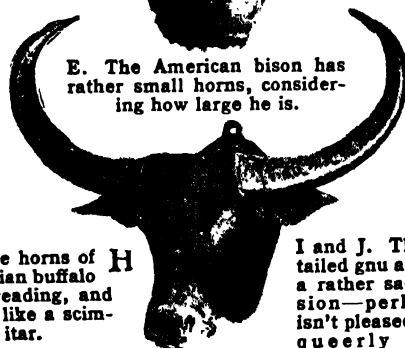


F

F. The gaur of India is the largest of the ox family. His upturned horns are greenish in color and black at the tips.



G. Here is the head of a female European bison, an animal which is now nearly extinct.



H. The horns of the Indian buffalo are spreading, and curved like a scimitar.



I

I and J. The white-tailed gnu always has a rather sad expression—perhaps he isn't pleased with his queerly shaped horns!



J

K. Here is another view of the Cape buffalo. It will show you how massive are this animal's horns.



L. The white-bearded gnu, whose slender horns are more graceful than those of his white-tailed cousins.

THE WILD KIN OF THE COW



Photo by American Museum of Natural History

The gaur is a wild animal from India. It is said that years ago the natives were able to tame it—which does not seem strange, for it is a near relative of our do-

mestic cattle. But now the secret of taming it is lost. Hunting the gaur requires knowledge and skill, and has for a long time been a popular sport.

the wild ox of India. The bull is a handsome animal with a dark-brown coat, white stockings, and long, curved, pointed horns. It is the largest of all wild oxen, even larger than the water buffalo, but the cows are a good deal smaller. Solitary bulls are often very wild and savage; but those living in herds are usually quite mild-tempered animals. Small herds of gaur live in dense jungles on the hills of India and the Malay Peninsula, and only come out into the open early in the morning and again in the evening to crop the grass in the green glades. They are cautious animals. When resting they lie down in a circle with their heads outward, so as to keep watch all around and be ready to face a leopard or a tiger if one of these fierce hunters comes prowling about.

The Grunting Ox

Another interesting member of the cattle tribe is the yak (yāk), or the grunting ox, as it is sometimes called because of the peculiar noise it makes. It is a strange, melancholy-looking animal, with a fine pair of horns and very short legs, dressed in an extraordinary

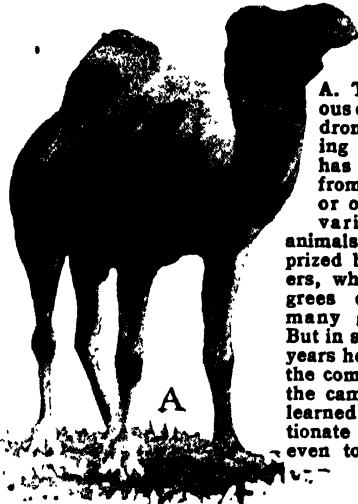
coat of thick, silky hair, which hangs down all around in long fringes that almost sweep the ground. The yak certainly needs its warm coat, for it lives in a terribly cold part of the world, up on the high plateaus and barren mountains between India and Tibet.

The Dull Life of a Yak

In these bleak, unfriendly regions, with little to do and less to eat, the yak seems to lead a dull, uninteresting kind of life. He wanders around in the early morning cropping the scanty tufts of coarse, dry grass which is the only food to be found in such desolate places, and he lies down for the rest of the day among the rocks, patiently chewing the cud. In the evening he heaves himself up and wanders about to see if he can find a few more green tufts fit to eat.

In China and Northern India, tame yaks are kept and put to work by the natives. In the milder parts of the country they are employed in ploughing the fields, but it is as beasts of burden that the animals prove most useful. A yak can endure cold that would kill a horse or a mule, and with a heavy

THE WILD KIN OF THE COW



A. This supercilious creature is the dromedary, a racing camel which has been bred from the Arabian, or one-humped, variety. These animals are much prized by their owners, who keep pedigrees of them for many generations. But in spite of all the years he has spent in the company of man, the camel has never learned to be affectionate or friendly, even to his master.



B. If you always had to walk in shifting sand you would be glad to have a foot like this one, which belongs to the dromedary. The two spreading toes are protected by hard cushions and broad nails that are almost like hoofs. A dromedary can cover nine or ten miles in an hour, while the ordinary pack animal can cover only two and a half. But on rocky roads a dromedary does not do so well, for the rocks hurt his feet; and in steep, slippery places the poor creature is almost helpless.

D. The knees of the camel are protected by horny pads; so he can kneel quite comfortably without fear of tearing his skin. He has another horny spot on his chest, which supports his weight when he is lying down.



C. Head of a dromedary.



E. This is the Bactrian, or two-humped, camel, which has been used since ancient times as a beast of burden in Central Asia and even in Siberia. He is a heavier, sturdier animal than his Arabian cousin, and is better suited to endure the cold and to travel over mountainous regions, for he is protected by a shaggy coat of long hair.



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load on his back will trudge patiently and safely over the slippery tracks across the frozen mountains. Even if he loses his footing and falls down a gully, which he may well do when the path is very steep and stony, the yak is not troubled by the mishap. He just grunts, staggers to his feet again, scrambles back up to the track, and goes marching on his dreary way.

Besides being forced to toil for his owner, the poor yak is often deprived of his long, fringed tail. This adornment is greatly prized in Eastern lands. Dyed red, it is used by the Chinese to decorate their caps, and mounted in a silver handle it is flourished to keep the flies away by the people in India.

Another very useful beast of burden in Eastern lands is the camel. No animal is so valuable in the hot, dry parts of the world; for with little to eat and less to drink it can travel long distances across the great deserts of Africa and Asia without suffering from short rations and lack of water.

The camel can hardly be called a "wild" animal. It has lived with man as his servant for a much longer time than the horse, and the few scattered herds living in the wilds of Asia to-day are the descendants of tame animals who from time to time have strayed away from their owners.

Although the camel is a very ugly, awkward-looking beast, it is marvelously fitted for its own particular walk in life. The queer

hump on its back is really a private larder, stored with fat which the animal can draw upon for strength when other food supplies run short. At the end of a long, weary journey over barren land, when the camel has used up most of its fat, the hump will have almost vanished. But a long rest and plenty of good food at the journey's end will restore the hump to its former size.

Besides this store of food, the camel carries enough water, in special water cells in its roomy stomach, to last it for several days on a journey—and nothing could be more useful in barren desert lands.

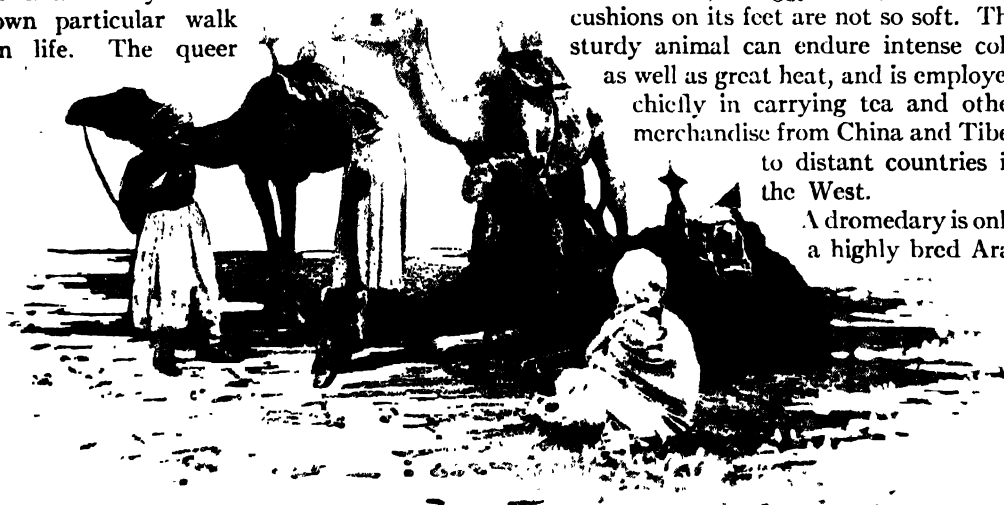
Finally, to keep from being suffocated by the blinding sand storms of the desert, the animal can close its large nostrils when the danger arrives, and can also shield its eyes by especially thick, heavy eyelids.

Its feet are shod with soft, broad cushions, the best kind of shoes for walking on loose sand, while its knees and breast are protected by thick, horny pads, to prevent its skin being injured when it kneels down.

The common Arabian camel—the "ship of the desert," as it has often been called—is a tall, long-legged beast with a short hairy coat and one hump on its back. The Bactrian camel, a native of Central Asia, has two humps. It is a heavier animal than its African cousin, and has short, stout legs and a thick, shaggy coat, while the cushions on its feet are not so soft. The sturdy animal can endure intense cold as well as great heat, and is employed chiefly in carrying tea and other merchandise from China and Tibet to distant countries in the West.

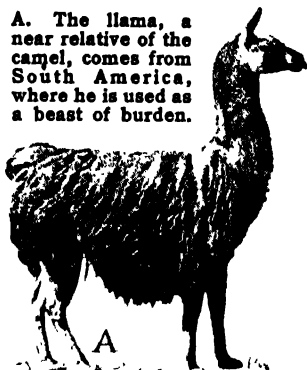
A dromedary is only a highly bred Ara-

These Arabs are resting their strange steeds. Well may the camel be called the "ship of the desert," for besides being the best means of transport across the wave-covered wastes of a sea of sand, these creatures walk with a rocking motion which is very likely to make the rider feel all the sensations of being at sea!



THE WILD KIN OF THE COW

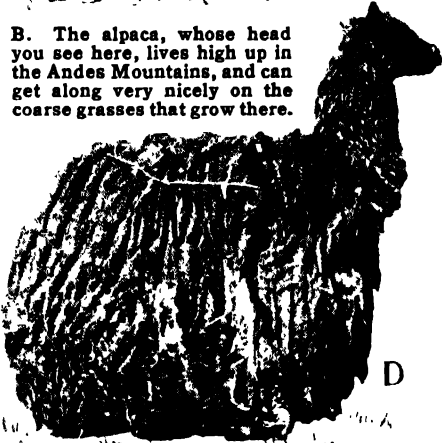
A. The llama, a near relative of the camel, comes from South America, where he is used as a beast of burden.



C. A llama and her baby.



B. The alpaca, whose head you see here, lives high up in the Andes Mountains, and can get along very nicely on the coarse grasses that grow there.

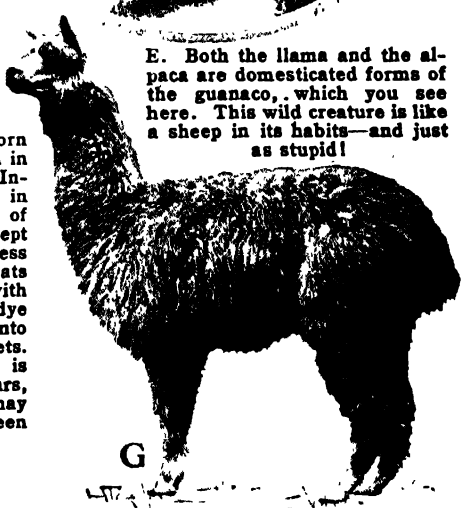


D. It is hard to believe that this is an animal, and not a new kind of mop. The alpaca, as this over-dressed creature is called, is bred for his wool, which is very long, as you see, and also very soft and fine—when combed!



At F and G are alpacas shorn of their petticoats. Even in the days of the ancient Incas, llamas were used in great numbers as beasts of burden. The Incas also kept a smaller breed, doubtless alpacas, whose heavy coats provided the natives with wool which they could dye bright colors and weave into warm clothing and blankets. To-day the alpaca herd is sheared every two years, and a single animal may yield as much as fifteen pounds of wool.

E. Both the llama and the alpaca are domesticated forms of the guanaco, which you see here. This wild creature is like a sheep in its habits—and just as stupid!



THE WILD KIN OF THE COW

bian camel used for racing or swift traveling instead of as a pack animal.

Although camels are very valuable, they are anything but engaging in their ways. They know their own masters, but never show the least affection for them, however kindly they may be treated. They are quarrelsome, bad-tempered creatures, too, always ready to bite and kick their companions whenever they have the chance.

In the New World the camel tribe is represented by the llamas (lä'mä) and the guanacos (gwä-nä'kō). The llamas, like the camels, have long ceased to be wild animals, and in South America they are employed to draw small carts and carry packs upon their backs. But the guanacos, from which the llamas are descended, still roam free over the Andes from desolate Cape Horn all the way to the Equator.

The llama has no hump, and its coat of thick, long, woolly hair makes it look like a strange, long-legged, long-necked sheep. It is very strong and can carry heavy loads, while its neat, hard hoofs enable it to travel easily over rough, rocky ground. But although it will work well when it chooses, the llama is very obstinate. If its load is only a pound or two heavier than usual, it will lie down and refuse to budge until the extra weight is removed. On the road it will go

only at its own pace, and there is no use at all in trying to make it trot any faster. When it considers that it has done enough work for the day, the llama will simply stop; and it will spit at its driver if he attempts to urge it on!

The guanacos have equally bad manners. They wander about the mountains in large herds, and the bucks of the party are always fighting and spitting at one another. They rear up on their hind legs like goats when fighting, strike at their opponents with their knees, and butt savagely; the long necks of many old bucks are covered with scars from the wounds they have received in these encounters.

Smaller than the llamas, though very much like them, are the alpacas (äl-pāk'ä). They are best described as half-wild animals. Large herds of alpacas are reared on the high mountain pastures by the natives of South America for the sake of their valuable woolly fleeces, which are so long that they almost touch the ground.

Smaller still is the vicuña (vī-kōōn'yä), the last of the llama family, which wanders in herds over the Andes of Peru in the desolate heights just below the snow line. It is a wild, untamable little creature, hunted by the natives for the sake of its pretty brown coat, which is exquisitely soft and silky.



These Bactrian camels are quite as unlovable as they look!

Photo by N. Y. Zoological Society

MAMMALS

Reading Unit No. 14

THE FLEETEST FEET IN THE FOREST

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

The strange neck of the giraffe, 4-404
How giraffes escape enemies, 4-404-5
How stags get their antlers, 4-406
Virginia and mule deer, 4-407

The quiet life of the moose, 4-407, 408-10, 411
The wandering reindeer, 4-411-12
Deer of Europe and Asia, 4-412-13

Things to Think About

How was it decided that giraffes are deer?
What makes a giraffe's neck very long?
How does a giraffe's neck help it to survive?

Why do deer fight?
Why do caribou wander a long distance every year?
Which is the smallest deer in the world?

Picture Hunt

Who is the skyscraper of the animal kingdom? 4-403
How is a giraffe able to eat grass? 4-404
How do wapiti manage their antlers when running through the woods? 4-407
What happens to the antlers of a deer every season? 4-408

Why is our mule deer so named? 4-409
What deer are you most likely to see in the woods? 4-402
How do some deer fights end? 4-411
What deer was once well known to cave men? 4-411

Related Material

How do we know that reindeer were hunted by cave men? 12-106, 11-3

What has been done to reindeer in Alaska? 8-12

Summary Statement

Giraffes fascinate us because their necks are very long. In their native Africa their long necks help them to see enemies at a distance and to eat leaves

from trees. Antlers of deer drop off after the breeding season. The reindeer are used in the north as horses and also for food.

THE FLEETEST FEET IN THE FOREST



A. This pretty stag, whose antlers are still in the "velvet" stage, is a Virginian deer from the Northern United States. These animals are very timid and make their homes in thick forests, where the dense brush gives them many hiding places. That is one reason why there are so many of them still alive.



B. The axis deer of India and Ceylon is the most beautiful of all the tropical deer, and for that reason has been imported into many countries to adorn parks and private estates.

Sometime when you are out for a walk early in the morning, in a wood or in a meadow close to a forest, you may be lucky enough to see a deer. Perhaps a doe, with her little fawn snuggled close beside her, may be cropping the fresh grass; or again you may see a stately antlered stag. Sooner or later they will notice you and with one curious glance will bounce off into the forest, kicking their legs in the air like some rocking-horses.



C. The swamp deer of India is a good-sized fellow and has very handsome antlers. He lives on the plains.



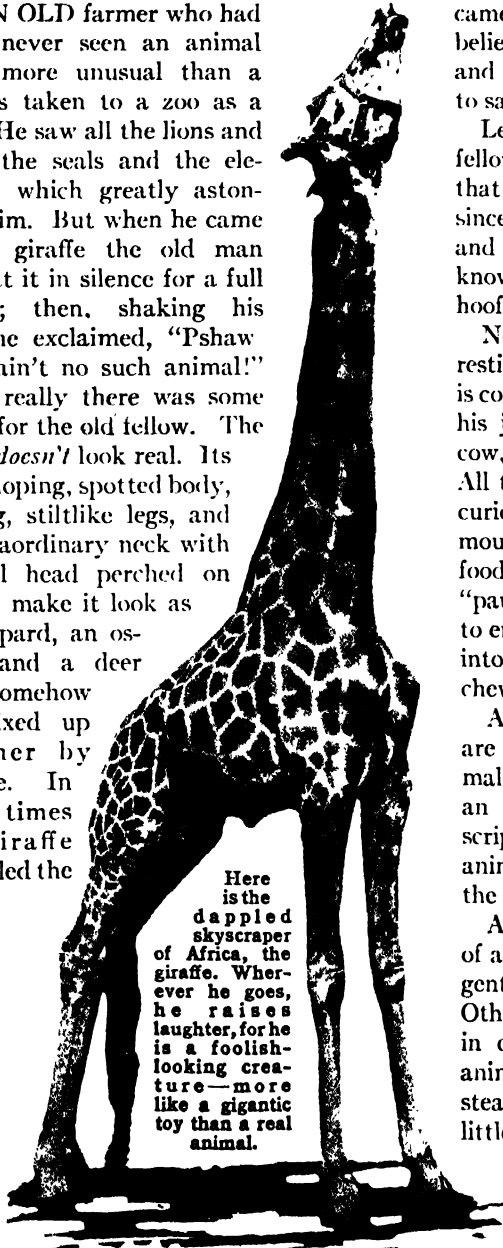
D. The sambar of India and China are an important part of the tiger's diet. They are wary deer and their dark brown coats make them practically invisible against their forest background; but Master Tiger has an extremely keen sense of smell—particularly when he is hungry and would like a nice venison supper.

The FLEETEST FEET in the FOREST

Timid and Largely Unarmed, the Deer Tribe Flourish in Great Numbers because They Can Show Their Heels to Almost Any Foe

AN OLD farmer who had never seen an animal more unusual than a fox was taken to a zoo as a treat. He saw all the lions and tigers, the seals and the elephants, which greatly astonished him. But when he came to the giraffe the old man gazed at it in silence for a full minute; then, shaking his head, he exclaimed, "Pshaw There ain't no such animal!"

And really there was some excuse for the old fellow. The giraffe *doesn't* look real. Its queer sloping, spotted body, its long, stiltlike legs, and its extraordinary neck with a small head perched on top, all make it look as if a leopard, an ostrich, and a deer had somehow got mixed up together by mistake. In olden times the giraffe was called the



Here is the dappled skyscraper of Africa, the giraffe. Wherever he goes, he raises laughter, for he is a foolish-looking creature—more like a gigantic toy than a real animal.

camelopard (kâ-mêl'ô-pârd), because people believed he was half camel and half leopard; and even to-day it might puzzle many of us to say exactly what kind of beast he really is.

Let us see what we can make of the curious fellow. In the first place, his feet tell us that the giraffe is a hoofed animal. Then, since his hoofs are divided into two halves and since he has two toes on each foot, we know that he must belong to the "even-toed" hoofed animals.

Now if we watch a giraffe when he is resting after a meal, we shall notice that he is continuously munching and munching with his jaws. He is "chewing the cud," like a cow, a sheep, a goat, an antelope, or a deer. All these animals eat their food in the same curious way. They hastily swallow huge mouthfuls without chewing, and stow the food away in a large inside pocket called a "paunch." Then, when they have leisure to enjoy their meal, they bring the food back into their mouths, bit by bit, and slowly chew and grind it up with their back teeth.

Animals that "chew the cud" in this way are called "ruminating (rōō'mĭ-nāt'ing) animals." So now we have it! The giraffe is an "even-toed, hoofed, ruminant"—a description almost long enough to match the animal's neck—and his nearest relatives are the deer and antelopes.

A giraffe's head is very much like the head of a deer, and the giraffe has the same large, gentle eyes that all deer and antelopes have. Otherwise he does not appear to have much in common with the fleet-footed, graceful animals with which he is connected. Instead of fine branching antlers he has two little knobs—you could hardly call them horns—on the top of his head. They are covered with skin, like the rest of his head, and have a tuft of black hair at the tip.

Photo by N. Y. Zoological Society

THE FLEETEST FEET IN THE FOREST

Although the elephant is much bigger and heavier, there is no doubt that the giraffe has the honor of being the tallest animal in the world. A full-grown bull giraffe stands from eighteen to twenty feet high and towers far above every other living creature. It is his remarkable neck and his long, lank legs which give him this advantage. And, strange to say, in spite of his unusual length, the bones in the giraffe's neck—which, you know, is the top of the spine—have only seven joints, exactly

These giraffes all come from Nubia. Baby giraffes, like the one on the left, are about the sweetest and silliest-looking babies of the animal world. They have large dark eyes shaded by long lashes which give them an innocent, trusting expression. The giraffe to the right below is not a baby learning to use his ungainly legs, but a grown giraffe who has to spread his forelegs in this way in order to get his head near enough to the grass to be able to graze.

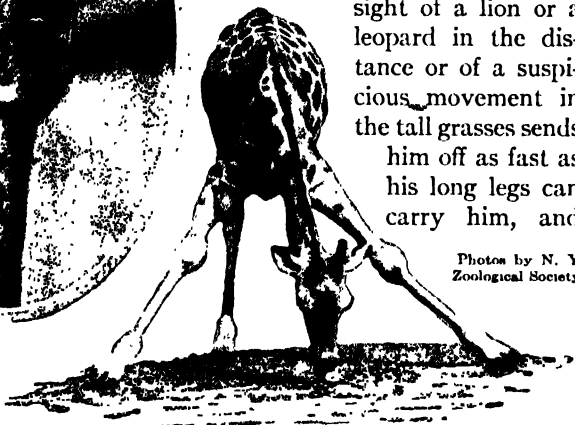


together. On the other hand, in his home in the African forests or among the scattered trees and shrubs on grassy plains, he gets his living by browsing on the leaves of the trees. These his long neck and his long legs help him to reach easily.

Best of all, the giraffe loves the leaves of the sweet-scented acacia; and this food gives his skin a sweet, strong scent, rather like honey. He does not bite off the leaves with his teeth, but plucks them with his tongue, which is so long and strong and pliable that he can twist it around tender leaves and shoots and tear them from the branches.

Besides being so useful in helping him to reach the leaves on the topmost boughs, the giraffe's neck serves him as a watchtower. From the top of it he can keep a lookout over the tall grasses, bushes, and even small trees, and spy an enemy that is still a long way off. The sight of a lion or a leopard in the distance or of a suspicious movement in the tall grasses sends him off as fast as his long legs can carry him, and

Photos by N. Y. Zoological Society



the same number as ordinary animals have. Even the hippopotamus, who appears to have no neck at all, has just as many. This makes the giraffe carry his neck very stiffly. He cannot bend or curve it in a graceful, swanlike manner; and when he moves, it seesaws up and down in a very comical way.

His long legs, too, are very awkward to manage when he wants to drink or graze; for in spite of his long neck the giraffe cannot bring his head down to the ground without straddling his forelegs in a most undignified fashion. But a giraffe seldom drinks—he sometimes goes without drinking for months

by the time the savage beast of prey reaches the spot where the giraffe has just been quietly browsing, his quarry will be far away.

The Speed of a Giraffe

It is surprising how fast a giraffe can go when he has a mind to do so. When he is not in any great hurry he swings along with an easy, shuffling gait, moving both legs on the same side of his body at the same time. His long neck bobs stiffly up and down as he goes. But even when he seems to be striding

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along in the most leisurely fashion, a man on horseback would have to ride hard to keep up with the long-legged giant. And when he really gets going, and breaks into his queer, rocking gallop, the giraffe sweeps over the ground at such a pace that only the swiftest horse can overtake him.

Without those long legs of his the giraffe would be a poor, helpless creature, at the mercy of all the fierce beasts of the African wilds. He has no natural weapons for defending himself, no tusks to rip, no claws to tear his enemies. But he can run and he can kick. He can break the leg or the back of a leopard or a hunting dog if he has time to get in a smashing blow with his hard hoof before he is pulled down.

In great measure the giraffe is protected, too, by his peculiar shape and coloring; only the sharpest eyes can see him. When feeding quietly upon the yellowish foliage of the acacias, the animal is hardly visible at any considerable distance—the long straight lines of his neck and limbs match the tall stems of the trees too well, and his spotted brown and yellow coat harmonizes too perfectly with the patches of light and shade among the leafy branches. Also, he never reveals his presence by snorting or grunting. The giraffe really is a "dumb animal." Whatever he is doing, or whatever happens to him, he is always absolutely silent; even when wounded and dying, the strange beast has never been known to utter a single moan of pain or fear.

These gentle giants live in small companies of from ten to twenty, though occasionally travelers have seen as many as fifty or sixty of them together in the African forests. In the southern parts of the continent they have creamy-white skins marked all over with dark brown

blotches, while in the northern regions they are of a pale creamy color with patches of chestnut red or chocolate, and are distinguished by having a third knob or horn in the center of their foreheads.

For a long time it was believed that there was no other animal at all like the giraffe living in the world to-day, but some years ago a great naturalist, Sir Harry Johnstone,

There are two kinds of giraffe: one that lives in the south of Africa and one that lives in the north. Here is a northern giraffe from Nubia; it boasts three horns on its head.

discovered that in the depths of the great Central African forests there was a remarkable beast which was certainly a relative of the tall dappled giant.

This rare and elusive animal is called the okapi (ô-kä'pê). It is about as big as a horse, and has a long, giraffe-like neck, a dark, purplish-brown coat, and a white face, while its forelegs, thighs, and hind quarters are marked with stripes of black, white, and orange.

If the giraffes are few in number, their nearest allies, the deer, are very numerous. They roam throughout most of the wooded regions of the world, and are hunted by the lion, the leopard, the tiger, or the jaguar in whatever country they happen to live. The only places where we find no members of the graceful, fleet-footed deer tribe are Australia, Madagascar, and the southern parts of Africa.

North America is the home of some of the most splendid of all deer. The noble wapiti (wôp'i-tî), or American elk, is one of the giants of his tribe. He stands five feet high at the shoulder and proudly carries on his head a pair of branching antlers which are sometimes five feet long, with as many as fifteen or twenty points. This of course is a stag; the gentle hinds are not so big and have no antlers.

In olden days large herds of wapiti deer roamed freely through the forests of the United States and Mexico; and the shrill whistle of the great stags, challenging one another to trials of

strength, was a well-known sound in late summer and early autumn days. Now, sad to say,

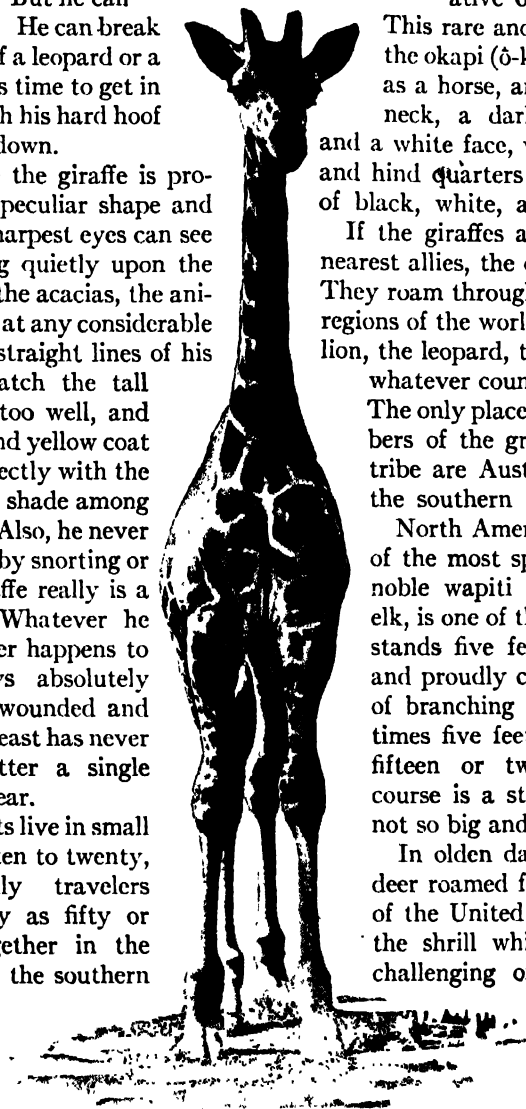


Photo by N. Y. Zoological Society

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these deer are far more rare, for the beautiful creatures have been cruelly hunted. Yet their number is now increasing in the eastern states.

The antlers, the stag's crowning glory, are not permanently attached to the animal's head. They are shed once a year, and replaced by a new pair. When he drops his antlers, the stag loses his bold, proud bearing. He is timid and dejected; and he wanders off alone into the depths of the forest, as if he were ashamed to be seen in such an undignified condition. Before very long, however, two little knobs appear on the top of his head, which rapidly grow into a new pair of antlers even finer than the last; for every year until the stag is full-grown, a new branch is added to make the antlers more imposing. So by counting the number of branches on a stag's antlers, a hunter can tell almost exactly how old he is.

How a Stag Gets His Antlers

While the antlers are growing, they are protected by a soft, downy skin, called the "velvet." The velvet is very tender, and it bleeds if it is torn; so at this time the stag moves about cautiously, and is very careful not to injure his new crown by knocking it against anything hard. When they are fully grown the antlers harden and the skin over them dries and shrinks. Then it begins to peel off and hang down from all the branches in long, untidy-looking strips; and to get rid of his velvet rags the stag rubs his head against the tree trunks.

Now the lordly stag is himself again, ready to face the world in all the pride of his fine new antlers. He is a splendid, sturdy fellow, with his glossy coat of yellowish brown and his dark head and mane; his legs are strong and graceful, his hoofs are

hard and neat, and he proudly throws his head back as he runs or gives forth his loud, echoing call. At such a time his widespread antlers rest on his back and shoulders as if they were too heavy for him to carry.

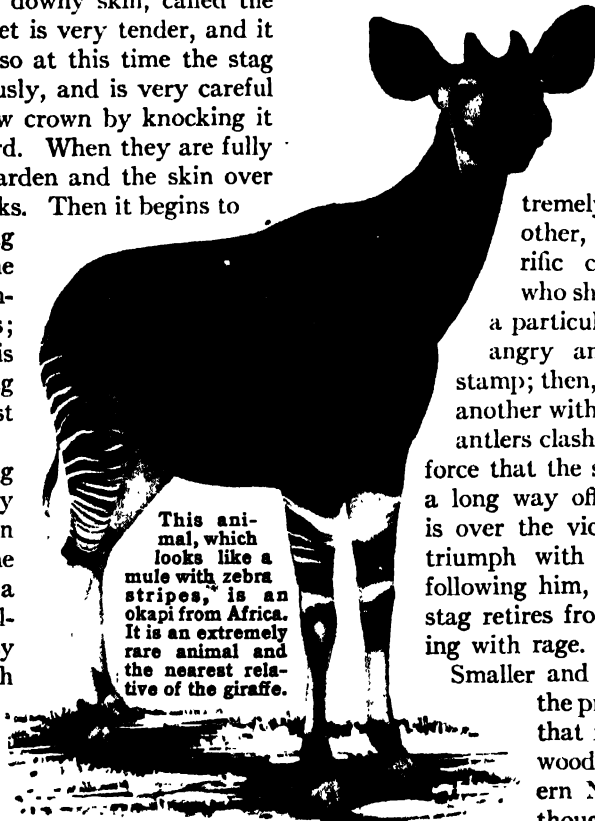
In summer time the full-grown wapiti stags wander about in small companies on the higher slopes of the hills. When the days are hot they are fond of bathing to get rid of the pestering flies and mosquitoes. The young stags, whose antlers are not yet fully grown, keep together on lower ground, while the hinds spend the summer days hidden in secluded thickets, guarding their baby fawns from prowling beasts of prey. A hind will fight to the death in defense of her young one, and if attacked by a bear, a puma, or a lone wolf, she will cry out loudly to summon any members of the herd who are within call to help her drive off the enemy.

When summer begins to wane, the stags grow restless and quarrelsome. They come down from the hills to seek their mates, and

each bold fellow rounds up as many hinds as he can persuade to join his family party. The rival stags are extremely jealous of each other, and often have terrific combats to decide who shall be the leader of a particular band. The two angry animals bellow and stamp; then, as they rush at one another with bowed heads, their antlers clash together with such

force that the sound can be heard a long way off. When the fight is over the victor marches off in triumph with the hinds meekly following him, while the defeated stag retires from the field bellowing with rage.

Smaller and not so warlike are the pretty Virginian deer that range through wild, wooded districts in Eastern North America—although they, too, have



This animal, which looks like a mule with zebra stripes, is an okapi from Africa. It is an extremely rare animal and the nearest relative of the giraffe.

Photo by American Museum of Natural History

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Photo by American Museum of Natural History

Here is the lordly wapiti in his beautiful mountain home. This deer is second only to the moose in size

and is a magnificent animal, sturdily built, with huge antlers, but nevertheless extremely graceful.

been driven out of many parts of the country where once they were free to roam at their pleasure. They are now well protected by law in most places, though in many states there is a short open season for hunting them. There they have grown less timid than the herds in wilder districts; and bands of the gentle creatures in their pretty coats of chestnut red, marked with black and white, may be seen quietly browsing in many a shady wood, even on the outskirts of the towns.

The Virginian deer is sometimes called the "white-tailed deer," because, like a cotton-tail, its stumpy tail is white underneath. So, too, the mule deer of the western states is often called a "black-tailed deer" because it has a black tip on its tail.

The mule deer loves the more open country. He may be discovered resting in the tall grass by a stream bordering a wide prairie. If you startle him, he is up and away in a flash, speeding over the

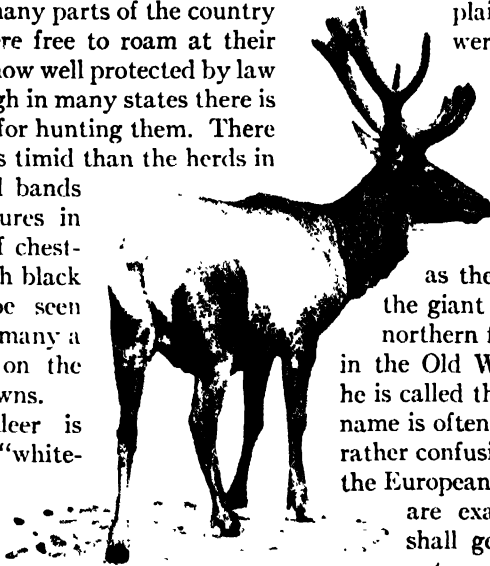


Photo by N. Y. Zoological Society

This animal, which is called a Whitney elk, belongs to the same race as the wapiti. In spite of its wide-spreading antlers it can run through thick forests at an amazing speed, swinging its head this way and that to dodge the overhanging branches.

plain in a curious way, as if he were jumping over the ground.

He is not so graceful as the Virginian deer, and you may always know him by the surprisingly big pair of ears which stand up on his head like a donkey's ears.

The most curious as well as the biggest of the deer tribe is the giant moose, who lives in the more northern forests both in the New and in the Old World. In Europe and Asia he is called the elk, while in America that name is often given to the wapiti. This is rather confusing; but if we remember that the European elk and the American moose are exactly the same animal, we shall get over the confusion without much trouble.

The moose, as we will agree to call him, is not like the rest of his tribe. No one could call him a beautiful or graceful animal. He is a huge, long-legged, ungainly-looking fellow, with a long, narrow head; small, deeply-sunken eyes; long flapping ears; a short, thick neck; and a loose, swollen muzzle which he is always twitching and twisting, making himself uglier than ever. His antlers, instead of being like the branches of a tree, are flat-

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tened like broad, spreading leaves, with the edges cut up into many sharp, jagged points.

When a moose is full-grown, which is not until he is five years old, his antlers measure from three to five feet across; and they are so heavy that if he had a graceful neck like a wapiti he would never be able to hold his head up.

Here are three stages in the growth of antlers. Those to the left are just "sprouting," and are covered with a velvety skin. Those to the right are full-grown, and are beginning to shed their "velvet." Below, the animal has shed his antlers; you can see the scars they have left, from which new antlers will grow.



Photos by N. Y. Zoological Society

In addition he has a thick, stiff mane that makes him look as if he carried a hump on his shoulders; and a large hairy pouch hangs down from his neck and swings to and fro as the animal strides along. This peculiar ornament is called the "bell," but what its use may be no one seems to know. We must not forget his hoofs, which are long and pointed and divided into two separate halves that clack together like castenets as he moves.

The cow moose is just as ungainly as her mate. She is not quite so big, and of course she has no antlers, but she has the same large swollen nose and loose upper lip. As a rule she does not wear a "bell" though occa-

sionally, for some unknown reason, she too will grow one.

The moose is a solitary animal. He does not care to live in a crowd, but prefers to go his way alone. The summer days he spends in the marshes or in thickets on the borders of a lake or river where he can bathe and

wallow in the mud to his heart's content. He loves to wade breast high in the cool water, feed on the water plants, and plunge his great head below the surface to tear the yellow water lilies up by the roots. At other times he wanders through the shady woods, browsing on the fresh green shoots and tender bark of young trees. Here he finds his long legs very useful. But even with their help he is not able to reach the nicest and most tempting shoots and leaves—which nearly always grow just a little too high; so the moose stands on his hind legs, leans his heavy weight against the tree, and "rides it down" until the slender stem snaps, or at least is so bent that he can get what he wants. By

THE FLEETEST FEET IN THE FOREST

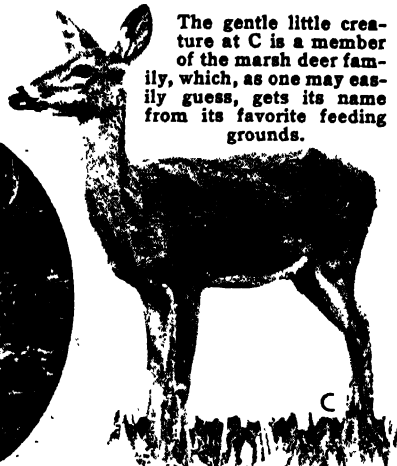
These are all deer, but they come from all parts of the world and each one is a little different from the next.



A. This is Eld's deer, from the Orient. It is fond of swamps and marshes, where it feeds on wild rice and other plants.



B. This sleek, well-fed member of the deer family comes from the southern part of the United States and is called a Florida deer.



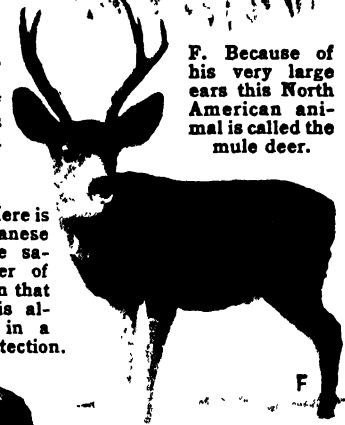
The gentle little creature at C is a member of the marsh deer family, which, as one may easily guess, gets its name from its favorite feeding grounds.



D. A deer from Mexico. Like this one, many American deer have horns with only a few branches.



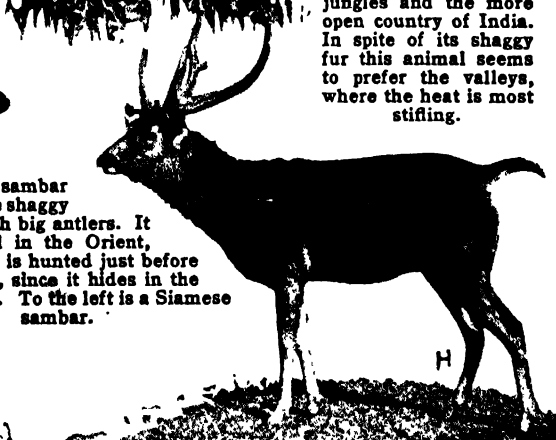
E. Here is a Japanese sika, the sacred deer of Japan; in that country it is always kept in a park for protection.



F. Because of his very large ears this North American animal is called the mule deer.



G. The sambar is a large shaggy deer with big antlers. It is found in the Orient, where it is hunted just before daylight, since it hides in the daytime. To the left is a Siamese sambar.



H. This is a sambar stag, which roams the jungles and the more open country of India. In spite of its shaggy fur this animal seems to prefer the valleys, where the heat is most stifling.

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this trick the moose often does a great deal of damage to young forest trees.

When winter comes the moose moves off to higher ground, where in the thick woods on the hillside he may find food and shelter among the trees until the cold, hard times are over. Winter is the only time of year when moose are at all sociable. Several animals, both bulls and cows, will then often band themselves together and establish what is called a "moose yard." Having fixed on a sheltered spot, which usually covers two or three acres of forest land, the animals live and feed there all through the bitter weather, seldom going beyond the borders of their chosen territory. When the snow lies thick and deep they tramp out a network of paths all over their yard. On these

hard, smooth pathways they move about without any difficulty when they are feeding, and are always within call of one another in case of danger.

They fear the great gray wolf of the north. When the cry of a hunting pack is heard in the stillness of a winter night, the

poor beasts stand quivering with terror, not knowing whether to flee or hide, until the dread sound dies away in the distance. Sometimes it does not die away, but comes nearer and nearer. The wolves dash into the moose yard and the terrified deer are surrounded by the howling, leaping hunters. If the pack is a

Here is the monarch of the deer tribe, the great moose of America. In Norway, Sweden, and Russia he is known as the elk. He is certainly not a beautiful creature, with his little eyes and long fat nose, but he has a certain majestic dignity which only the largest and most powerful of the animals possess.

large one there is no hope for the small band of moose, though they fight valiantly, charging the pack with their great antlers and dealing the foe terrific, chopping blows with their hard, sharp hoofs; but if the pack is only a small one, the moose may often kill several of the wolves and succeed in driving the rest away.

Unless they are attacked, moose are not savage animals. Rival bulls will fight furiously when they are seeking their mates in the autumn, as all deer do; and the cows, if their fawns are threatened, will bound in a fury at the man or beast who attempts to molest them. But at other times

In spite of their size these moose can run without making a sound and with their long, swinging gait can cover great distances without getting tired out. Long ago in Scandinavia they were harnessed and trained to pull sleighs, just like horses.

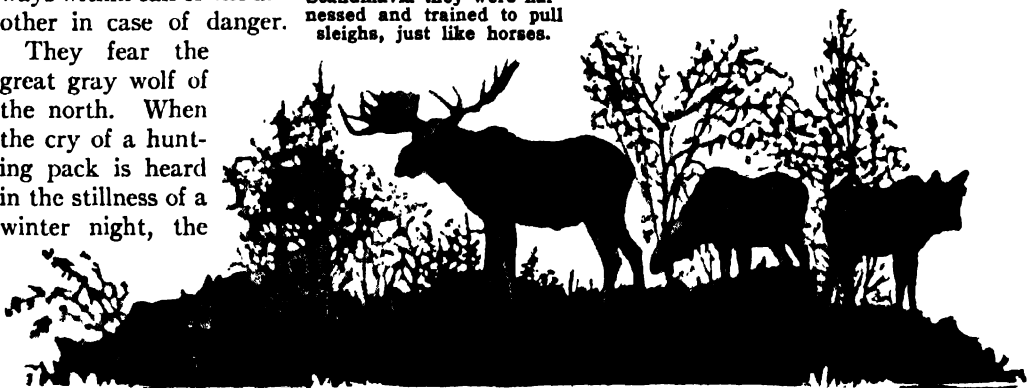


Photo by American Museum of Natural History

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moose are really rather timid beasts. At the first hint of danger they will take to their heels as fast as they can go, and it is really astonishing how quickly and surely a huge bull will make his way through a tangled thicket, in spite of his wide-spreading antlers.

The American caribou (kär'ti-bōō) is another animal that differs in several ways from most of the deer tribe. Though not so big and clumsy-looking as a moose, he is less graceful than the wapiti and Virginian deer. He is a sturdy-looking animal with a big head, rather short neck, and comparatively short, stout legs. Nevertheless he is a splendid creature, and a large herd of caribou, tossing their antlers as they rest in the shade of the trees or swinging along at a steady trot over the wild tracts of country in their far-away northern homes, is a magnificent sight.

Both the stags and hinds of the caribou bear antlers, though the hind carries a lighter pair than her mate. The antlers themselves are unusual; they spread out wide at the base, rather like the antlers of a moose, and bend down over the animal's forehead. Then as they lengthen they divide into several upright branches—but these adornments vary so much in shape that you will hardly find two caribou with antlers exactly alike. Their feet, too, are remarkable. The hoofs are broad and very deeply

cloven, and the two halves spread out when pressed on the ground. They are, in fact, excellent snowshoes, enabling the deer to travel easily over soft snow or to take a firm grip on frozen, slippery ground; and this, of course, is very useful to an animal that lives in northern regions.

The caribou is a native of the arctic regions of America, Europe, and Asia. In the Old World it is called the reindeer, and in Norway, Lapland, and Siberia it is tamed and employed in drawing sledges over the snow. Large herds of reindeer are also kept for the sake of the milk they give.

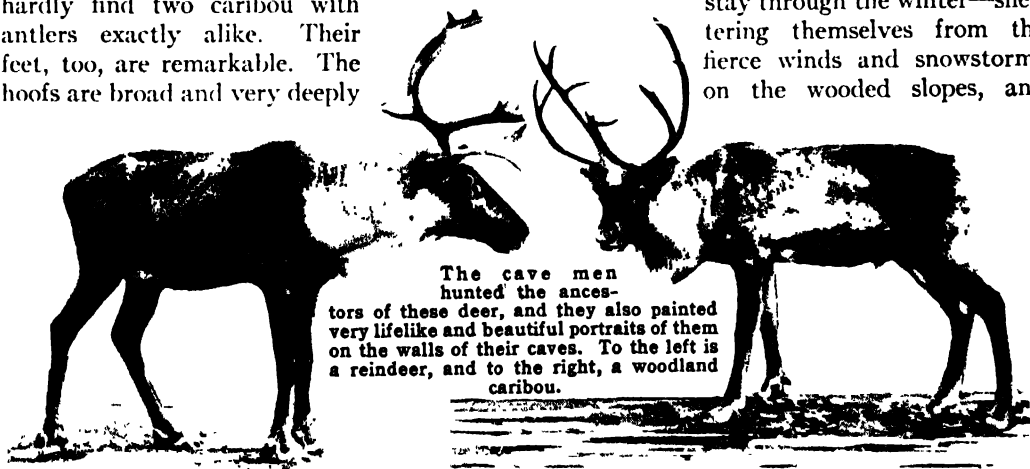
In a wild state reindeer or caribou are great wanderers. They roam about in large herds, changing their haunts with the changing seasons of the year. In summer, when all is fresh and green, the northern caribou live on grassy plains and in the valleys, grazing contentedly on the grass and the young shoots of the scattered trees and bushes that grow here and there on the barren ground. In autumn they troop down to the coast and feed upon the seaweed thrown up in great masses on the shore.

Then, as the days grow colder and colder, the caribou move off to the hills, where they stay through the winter—sheltering themselves from the fierce winds and snowstorms on the wooded slopes, and



Photo by H. I. Zimmerman

The animal world has its tragedies, too. Here are the skulls of two stags, locked in death. While the deer were fighting their antlers got locked together and, no matter how much the creatures struggled, they could never pull their horns apart.



The cave men hunted the ancestors of these deer, and they also painted very lifelike and beautiful portraits of them on the walls of their caves. To the left is a reindeer, and to the right, a woodland caribou.

THE FLEETEST FEET IN THE FOREST



Photo by American Museum of Natural History

With so many enemies it is a wonder that the deer family ever dares pause long enough to catch a bite to eat or a wink of sleep; for although the deer may do some damage with his antlers, only his nimble feet

can save him from the cats of the forests, the wolf pack, and deadliest of all, the huntsman. Above is a family group of Indian deer, including the stag, his doe, and their two half-grown children

feeding on "reindeer moss," a dry, gray lichen that grows in abundance on the hill-sides in the far north. So long as the snow remains fairly soft, the caribou collect in large numbers, come down from the hills, go back to the coast, and start their round of travel all over again. The animals all move together like a regiment on the march; the queer, grunting noise they make and the clattering of their hoofs can be heard very far away.

The American woodland caribou are larger than their cousins of the barren lands, and have different ways and habits. They make their homes in the woods of Canada and of the Northern United States, where they live contentedly through a large part of the year. But like the hardier caribou of the arctic snows, they grow restless at times, especially in the summer. Then they assemble in traveling parties and leave the leafy woods to wander far over the plains and barren lands.

The caribou that live on the barren wastes

of the far north do not spring and bound as they run, like most of the deer tribe. They do not need to, for they seldom meet with any obstacles worth jumping over. But woodland caribou often find fallen trees or low branches in their path; so, although they do not like jumping, they must be able to jump when they are in a hurry—when fleeing from a lynx or a puma, for example.

In the Old World the deer are much like their American relatives in their ways. They do not love hot, dry regions, but prefer sheltered woods and pasture lands. The fine red deer are very much like the wapiti, who is the chief of the red deer clan; they wander over the wooded hills and moors in many parts of Europe and Asia. Several beautiful spotted deer roam in the woods and jungles of both continents.

The Indian spotted deer in its golden-brown coat spotted with white is one of the most graceful

of its tribe. Hundreds of these gentle creatures live together in the wooded hills and



Photo by N. Y. Zoological Society

This is the red deer of Europe and Asia, once very common in England. He it was that the noble lords of Europe hunted in the Middle Ages, and he probably was the deer that furnished Robin Hood and his merry men so much sport in Sherwood Forest.

THE FLEETEST FEET IN THE FOREST

in the bamboo jungles, where their bright, spotted coats blend so well with the brown and yellow tints of the woodland trees and the flecks of sunlight glancing through the foliage that when the animals are resting they are almost invisible. This gives the beautiful deer great protection against their dreaded enemies, the fierce tiger and the panther, who are always on the lookout for them.

In the Indian jungles, too, lives the noble sambar, a splendid fellow standing five feet high. He is not so graceful as the red or spotted deer, and his sooty-brown coat is rough and shaggy. But he carries a fine pair of branching antlers on his head. Although they are such big, heavy animals, the sambars are wonderfully fleet-footed, and the swift rush of a big antlered stag through the jungle as he flees before a beast of prey is one of the most thrilling sights in the animal world.

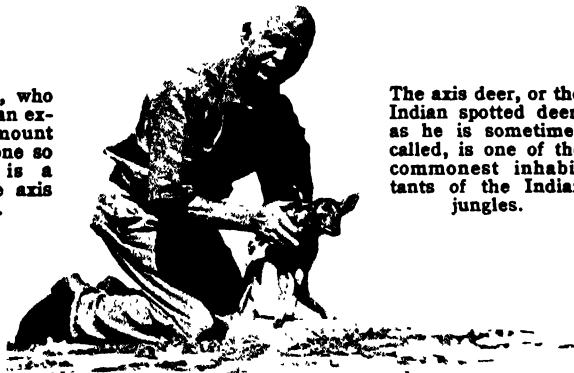
The big sambar and his little cousin the muntjac, or barking deer, might be called the giant and the dwarf of the deer folk of the Indian jungles. The muntjac is only two feet high, a slender little creature in a glossy, chestnut-red coat, with a pair of small, two-pronged horns standing bolt upright on the top of its head. Two strange-looking ridges beneath its eyes have given the little animal yet another name—the “rib-faced deer”—while it is also called the barking deer, or karka, because it has a hoarse, barking cry, rather like the bark of a fox.

It is a shy little deer, by whichever name we call it; it hides in the thickest of the jungle, and when startled it takes to its heels at great speed, running with its back raised and its head down to keep its small horns from being caught in the tangled thickets. Besides the sharp horns, the stag has a long, curved pair of tusks in its upper jaw, and it knows how to use them when brought to bay by hunting dogs.

Muntjacs live alone or in pairs. They do not herd together like most of the deer tribe. The little creatures are more often heard than seen, and surely the noisy barking which they may keep up for hours at a time must often betray their whereabouts to the hungry hunters of the jungle.

Smaller still are the tiny mouse deer, or deerlets, timid little animals no bigger than a rabbit, with no antlers. They do not belong to the true deer tribe. The Indian mouse deer has a brown coat spotted with white, and is famous for being almost, if not quite, the smallest of all hoofed animals. For there is a tiny antelope called the “royal antelope” which also claims this distinction. The little mouse deer is as clever as it is small. If it is caught in a trap, it will “play ’possum” by pretending to be dead. It will lie perfectly still until the hunter opens the trap; then the little rascal leaps to its feet in a flash and is off and away, fleeing for life through the grass of the jungle. For though the dainty little fellow is so tiny, he is quite as nimble of foot as if he were a true deer.

This tiny baby, who seems to have an extraordinary amount of vitality for one so very young, is a member of the axis deer tribe.



The axis deer, or the Indian spotted deer, as he is sometimes called, is one of the commonest inhabitants of the Indian jungles.

Photo by N. Y. Zoological Society

MAMMALS

Reading Unit No. 15

~~REPRINTED FROM THE YEAR BOOK~~

SOME KINSFOLK OF THE DEER

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

How antelopes are different from deer, 4-415
The life of the majestic eland of Africa, 4-416
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The Alpine chamois, 4-425
Wild sheep and goats, 4-425-30

Things to Think About

What kind of horns do antelopes and cattle have as compared with those of deer?
How are elands able to get along without water for a long time?
How do the sentinels of the pronghorns warn the herd from

a great distance?
Why is the chamois usually safe from hunters?
Why do Barbary sheep remain quiet when discovered?
What dangerous enemies do ibexes find on mountain tops?

Picture Hunt

What means of protection have the sable antelopes? 4-415
Do herds in Africa consist of only one kind of animal? 4-417
Why do animals fear herds of springboks? 4-420

Why are people amazed when they see agnu? 4-422
Why do wild goats have horns? 4-423
Where did our woolly sheep come from? 4-425

Related Material

What constellation has been named after a goat? 1-170
What benefits has man derived

from domesticating the wild sheep? 9-74-81

Leisure-time Activities

PROJECT NO. 1: Visit a large zoo and become acquainted with the wild sheep, goats, antelopes,

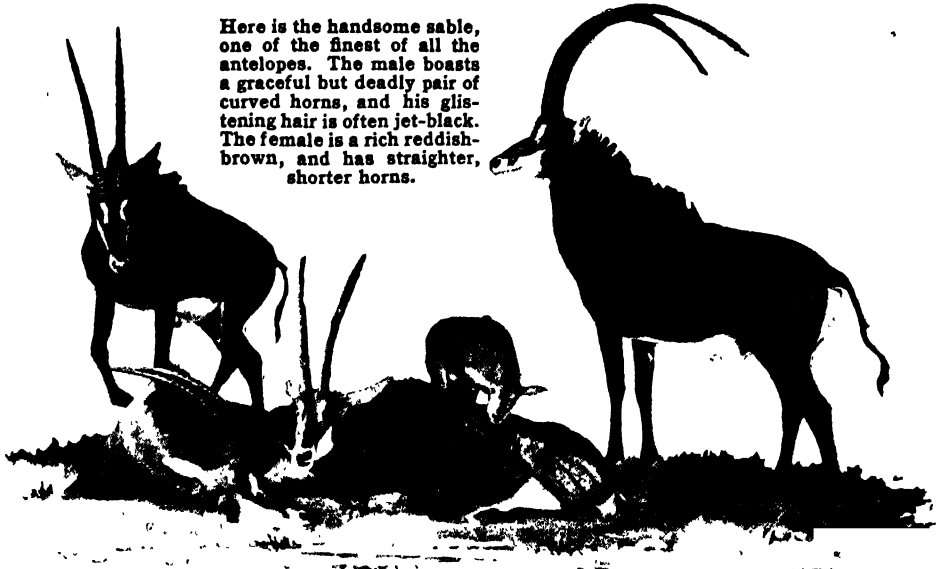
and gazelles. Study their horns. Or visit a farm where sheep are kept and observe the animals.

Summary Statement

Antelopes, unlike deer, have unbranched horns that last a lifetime. They are used for defense. Antelopes and gazelles can outrun the swiftest enemies. The

mountain goats and sheep can climb on the most dangerous peaks and leap great distances safely.

SOME KINSFOLK OF THE DEER



Here is the handsome sable, one of the finest of all the antelopes. The male boasts a graceful but deadly pair of curved horns, and his glistening hair is often jet-black. The female is a rich reddish-brown, and has straighter, shorter horns.

Photo by American Museum of Natural History

SOME KINSFOLK of the DEER

How the Antelope and the Gazelle Fly before the Wind, and How the Chamois Leaps from Crag to Crag

HAVE you ever realized that whenever we search for an example of perfect grace we go at once to the animals—never to man? The lithest acrobat in the world is clumsy beside a serpent's marvelous, flowing curves or the light bound of the deer and antelope. For antelopes are in many ways very much like deer. They are graceful, nimble animals with slender limbs and very beautiful eyes. Their feet are neatly shod with small, hard hoofs, divided like those of a deer into two separate halves, and they have horns upon their heads. But a deer's antlers are formed of solid bone, while an antelope's horns are hollow, and set upon a solid base. Cattle, sheep, goats, and antelopes all have the same kind of horns; in the books they are described as "hollow-horned ruminants," while deer are "solid-horned ruminants"—a "ruminant" (rōō'mi-nānt), of course, being an animal that chews a cud.

So antelopes belong to the great cattle tribe. They do not shed their horns as deer

do; the same pair lasts them all their lives, and as a rule the female as well as the male antelope is provided with these imposing ornaments. An antelope's horns are not branched like a deer's. They may be straight and pointed, curved backward, twisted like spiral shells, or bent into the shape of an ancient musical instrument called a lyre. And many antelopes have horns marked with rings.

There are no true antelopes in America, but in the Old World there are over a hundred different kinds, and at least ninety of these are natives of Africa. Nearly all of them live on the open plains, over which they speed like the wind when pursued by their relentless enemies, the lion, the leopard, and the African hunting dogs. Except for their horns, antelopes have no way of defending themselves; only their wonderful speed can save them from the jaws of the savage beasts of prey.

Though this is so in the case of most antelopes, they are not all such timid, helpless

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creatures. There are some almost as stout and heavy as cows—you would guess at once that they belonged to the cattle tribe—and a few very odd members of the antelope family look as if they were made up of a mixture of several different kinds of animals. The giant of the antelopes is the eland (ē'länd), which stands six feet high at the shoulder. The smallest is the royal antelope, a tiny creature less than a foot high, with a wee pair of horns hardly an inch long; he disputes with the little mouse deer the distinction of being the smallest of all hoofed animals. Both the giant and the dwarf antelopes are natives of Africa. The majestic eland roams in company with several hundreds of his kind over the hills and plains, while his tiny "royal"

cousin lives alone, or with his little mate, in the bush country, where there is plenty of cover to hide in.

The true eland is a fine animal. He is stout as well as tall, and his slender, twisted horns are two and a half feet long. Over his forehead a tuft of long dark hair hangs down between his eyes. This curious ornament is called a "bush." The cow eland has no bush, though she has a fine pair of horns, which are longer and more delicate than the bull's.

The Happy Life of the Eland

Through the dry season the elands keep together, grazing on the grass and browsing in the bushes on the plains and hills, where they grow so fat that an old bull will often weigh nearly a ton. They travel long distances in search of water at night, although they can go for quite a long time without drinking when they are crossing waterless parts of the country. Then they quench their thirst by cropping green plants and the watermelons they find growing here and there.

When the rainy season sets in, the large herds break up into small parties. The bulls

separate from the cows and wander about together in little bands. Sometimes a grumpy old bull grows tired of company and goes off by himself to lead a solitary life for a while. Then when the rains are over, the elands come together once more, and a number of big, full-grown bulls will live contentedly in a large herd without quarreling and fighting, as most animals in herds do, to determine who shall be the leader. Once in a while a bold young eland who is eager to be the leader of a herd will challenge the old bull. The two will fight, using their curved horns with little effect on each other, until the weaker bull is beaten

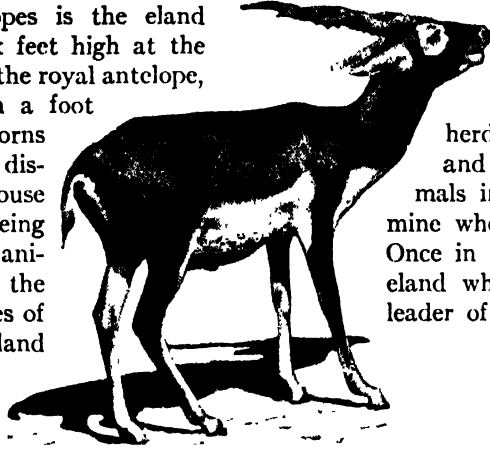


Photo by N. Y. Zoological Society

The blackbuck is an Indian antelope, a very handsome creature with long twisted horns. He is astonishingly swift and can outrun a greyhound, although a trained cheetah, or hunting leopard, can easily bring him down.

and driven away in disgrace.

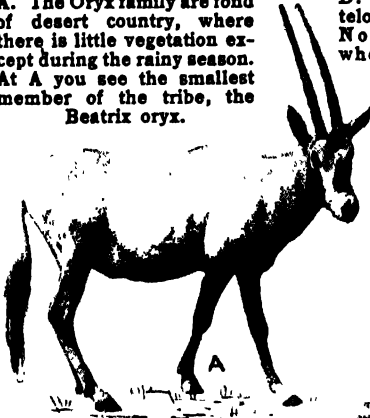
The sable, one of the handsomest African antelopes, is much more masterful. In a herd of twenty or thirty cows and calves there is never more than one fine old bull, who rules his large family and will brook no rival in the field. The sable is nearly as big as a pony. He has a glossy black coat, a snowy waistcoat, a thick, flowing mane of black hair, and a fine pair of horns quite a yard long and curving backward in a bold sweep from the top of his head. The female sables are dressed in dark brown. They, too, have fine horns, although theirs are not so boldly curved as the horns of their lords and masters.

The Boldest Antelope in Africa

Another South African antelope, nearly as big as the sable, is the gemsbok (gēmz'bók). His coat is gray and his face and legs are curiously banded with black and white. On his head he carries a pair of long, straight, sharply-pointed horns, which he uses against his foes with great skill and boldness, striking out right and left as he endeavors to spike his opponent with a deadly bayonet thrust.

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A. The Oryx family are fond of desert country, where there is little vegetation except during the rainy season. At A you see the smallest member of the tribe, the Beatrix oryx.



D. The addax antelope comes from North Africa, where his light coat harmonizes well with the sandy desert surroundings. These antelopes can go for a long time without water—which is just as well, for oases are few and far between.



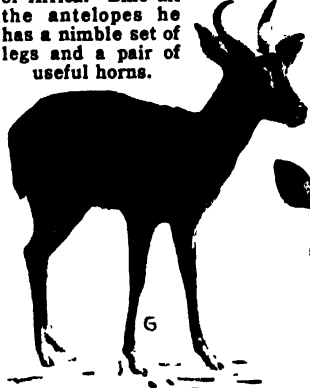
B. The nilgai comes from North India. Hunting it has long been one of the favorite sports of Indian princes, whose custom it is to present pairs of nilgais as gifts to distinguished visitors.



C. Hartbeests always live in open country where there are grassy plains. They often herd with other antelopes and with zebras, thus making a very motley company.



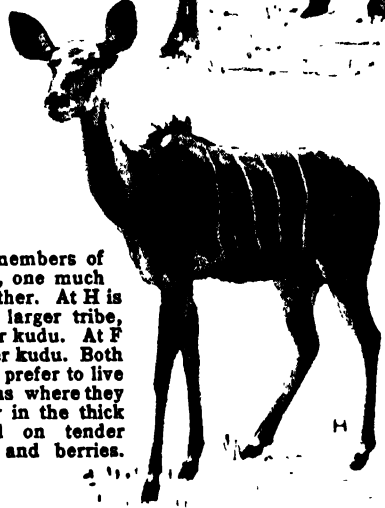
G. The reedunca antelope is a native of Africa. Like all the antelopes he has a nimble set of legs and a pair of useful horns.



E. Here is the handsome sable antelope, who is so handy with his strong sharp horns when he is attacked by an enemy.



There are two members of the kudu family, one much larger than the other. At H is a female of the larger tribe, called the greater kudu. At F you see the lesser kudu. Both of these animals prefer to live in forested regions where they can take shelter in the thick bush and feed on tender shoots, leaves, and berries.



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Photo by American Museum of Natural History

These two families of antelopes have met on the grassy plains of India. They combine grace and speed with

sturdiness, and are always on the watch, ready to flee—or to fight with their twisted horns.

The gemsbok will stand up to a lion, and sometimes he actually deals the great beast a fatal blow, though he rarely escapes without injury from such a desperate encounter. Occasionally both lion and antelope are mortally wounded in the combat. A hunter once found the two animals dead on the plain, locked together by the horns of the gemsbok, which had been driven right through the lion's body.

Then there are the water bucks, sturdy animals almost as big as the sable, with shaggy coats of long, coarse hair. Only the bucks have horns, which are ringed and curved, first backward and then forward again, at the tips. Water bucks live in small herds and love to stand knee-deep in the streams and rivers cropping the water plants. Many of them thus fall victims to the cunning crocodiles. Yet water bucks are often seen wandering over steep, stony hills a mile or more away from the waterside. If they are hunted at such a time, they dash at once at full speed for the nearest river and plunge into it to escape from their pursuers.

The Graceful Little Gazelle

There are so many charming little antelopes in Africa and Asia that we cannot possibly make the acquaintance of them all. But we must not pass over the gazelles, the most dainty and graceful little creatures be-

longing to the antelope tribe. All gazelles are light and slender, with slim limbs and tapering horns shaped like a lyre or twisted into graceful curves. Their pale fawn or sand-colored coats are smooth and sleek, their gentle faces are usually marked by a white streak running from each horn almost to the end of the nose, and they have the most beautiful dark, shining eyes to be found in the whole of the animal world.

The Dainty Springbok of Africa

Gazelles live chiefly in the deserts, where they skim like birds over the sandy wastes, so fast that not even the lion or the leopard can overtake them once they are up and away. The springbok of South Africa is one of the daintiest of all these charming little antelopes. Its glossy coat has a reddish tinge, its soft under-fur is snowy white, and there is a white stripe down the center of its back. Its black-ringed horns rise gracefully from its forehead in the shape of an ancient lyre.

The springbok has gained its rather curious name from its habit of springing suddenly high into the air—"pronking," as the Boers call it. Hundreds of these little antelopes roam together over the open country, and in dry seasons, when the ground is parched and nearly all green things are shriveled up, large numbers of herds often band together

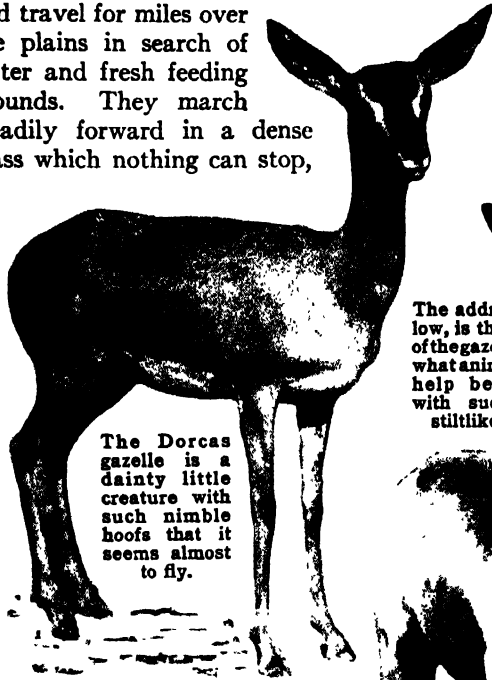
SOME KINSFOLK OF THE DEER



Photos by N. Y. Zoological Society

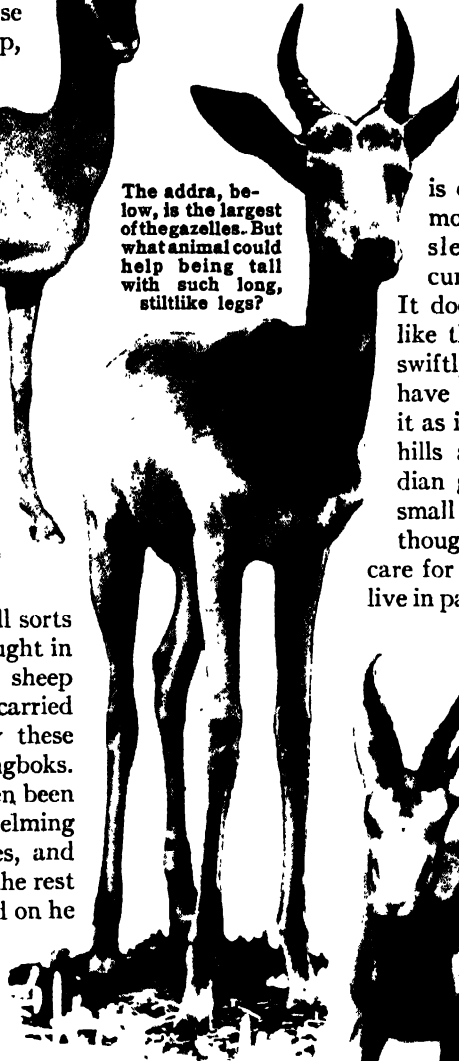
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and travel for miles over the plains in search of water and fresh feeding grounds. They march steadily forward in a dense mass which nothing can stop,



The Dorcas gazelle is a dainty little creature with such nimble hoofs that it seems almost to fly.

The addra, below, is the largest of the gazelles. But what animal could help being tall with such long, stiltlike legs?



pany with a dozen or more of its own kind it scours the plains in many parts of Africa and Asia, and wanders into Europe. The nimble little creature flies over the ground at a marvelous speed, leaping three or four feet into the air as it bounds lightly along.

The Indian gazelle is quite as dainty and almost as small, and has slender, ringed horns curved like the letter "S."

It does not leap and bound like the Dorcas, but runs so swiftly that the hunting dogs have no hope of overtaking it as it dashes along over the hills and sandy plains. Indian gazelles roam about in small parties of six or more; though some of them do not care for company and prefer to live in pairs. Like other gazelles, they feed on grass and leaves on the low scattered bushes, and they seem to live without drinking. At

sweeping along with them all sorts of odd creatures who are caught in the living flood. Flocks of sheep and goats are frequently carried along against their will by these enormous regiments of springboks. Even a lion has now and then been swallowed up in the overwhelming ranks of marching antelopes, and forced to march along with the rest of the strange army. On and on he must go whether he likes it or not, for any animal that stops or falls by the way is trampled to death by the hundreds and thousands of hoofs that pass over him.

There are many different kinds of these beautiful gazelles. One of the best known is the Dorcas gazelle, a little antelope hardly two feet high, with slender twisted horns about thirteen inches long. In com-

No one would think that the gentle-looking springbok at the right could do much harm, but sometimes the little creatures migrate in such tremendous herds that every blade of grass is destroyed in the fields they travel over, and larger animals are forced to travel with them or be trampled to death.



Photos by N. Y. Zoological Society

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A. The eland wears simple horns which usually have a spiral twist but no rings or knobs.



B. The horns of Littledale's mountain sheep are curved and heavy.



C. The horns of this roan antelope are not much bigger than his ears, but they are very strong and sharp.



D. Dall's mountain sheep has spreading horns, which are in striking contrast with his white coat.



E. When fully grown the roan antelope has horns like this.



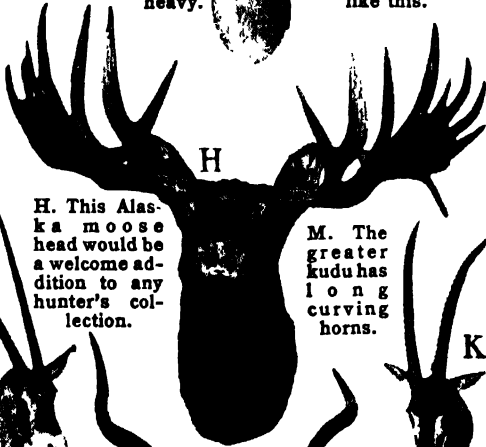
F. This is the same kind of sheep as the one at D, but the horns are not so well developed.



G. The defassa waterbuck has long slender horns in the shape of a lyre.



J. The horns of the beisa oryx are long and slender, and look more like ornaments than weapons.



H. This Alaska moose head would be a welcome addition to any hunter's collection.

M. The greater kudu has long curving horns.



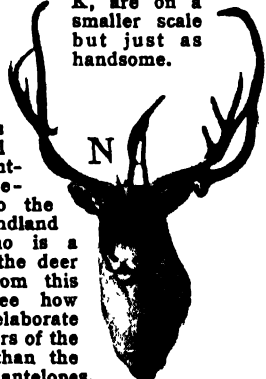
I. The giant sable has marvelously long, ringed horns. Those of his cousin, the ordinary sable at K, are on a smaller scale but just as handsome.



L. Here is the bull eland with his twisting horns. The cow eland, too, has horns, but hers are more delicately made, longer, and slenderer.



M. This beautiful set of antlers belongs to the Newfoundland caribou, who is a member of the deer family. From this you can see how much more elaborate are the antlers of the deer tribe than the horns of the antelopes.



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least many of them are known to live always in certain parts of the country where there is no water except in such deep wells that the little animals could not possibly reach it.

Very different from the elegant little gazelles are the gnus (*nōō*). You would hardly believe that these extraordinary animals can really be antelopes. Imagine a large heavy creature with the head of a buffalo, the slender limbs and neat hoofs of an antelope, and the mane and long flowing tail of a horse. Add a large muff of shaggy hair round its neck and a bristly beard on its heavy muzzle, and you have a very fair picture of a gnu—or “wildebeest” (wild’bēst’), as it is called in Africa.

“Wildebeest” is a very good name for the gnu. It is wild and quarrelsome too. Several bulls live together in the same troop, but they are so bad-tempered that they are always squabbling and fighting. For no reason at all, so far as one can see, a big fellow will suddenly rush full tilt at one of his companions and bump him over. This seems to be the signal for a general scrimmage all round. And almost before one knows it, all the bulls are fighting hard, plunging, kicking, snorting, and butting at one another.

Queer Capers of the Gnu

Then, just as suddenly as they began, they stop fighting and start prancing and capering like young kids. They skip and jump, spring high into the air, whisk their tails in the most ridiculous way, and tear round and round in a circle one after another as if they had all gone mad. Presently in the middle of these mad sports, one of the old bulls will stop short and give a peculiar sharp cry. At once all the rest whirl round, kick up their heels, and with a wild flourish of tails away they all go over the plain, to disappear in a cloud of dust!

There is a white-tailed gnu with a black coat and a white tail, and a brindled gnu which is a dark, mottled gray. Both of these beasts are equally strange in their ways, though perhaps the brindled gnu looks the more comical of the two, for its long, melancholy face and solemn expression make its ridiculous antics seem the more absurd.

Wildebeests are now growing very rare, though in times gone by large herds of them ranged through the greater part of Africa from the Cape to Abyssinia. Not so many years ago, when people were trekking over the plains, two or three wildebeests would often come up to have a look and begin skipping and gamboling round the wagons.

Though not quite so outlandish as the wildebeests, the hartebeests (*härt’bēst’*)

run them very close. They have long, miserable-looking faces, just as do the

brindled gnus, and very sloping backs which make them look extremely awkward and ungainly. They are astonishingly quick, however, and it is said that no

horse can overtake them. They will allow a hunter to come up quite close to them before they attempt to escape, but even then they are likely to win the race. There are still large herds of hartebeests in Africa, for these strange antelopes know how to take care of themselves. Besides being swift and wary, they are wonderfully hardy. In the desert regions where they live they go entirely without water for months together and seem none the worse for it.

Another strange antelope is the saiga (*sī’gā*), a queer, sheeplike animal that lives in herds on the broad plains of Siberia. It has very short legs and a stout, clumsy body, and on its head there is a rather short pair of twisted, amber-colored horns. But the most remarkable thing about the saiga is its huge, swollen nose, which is so large and puffy that the creature cannot crop the grass without wrinkling its nose up in what looks

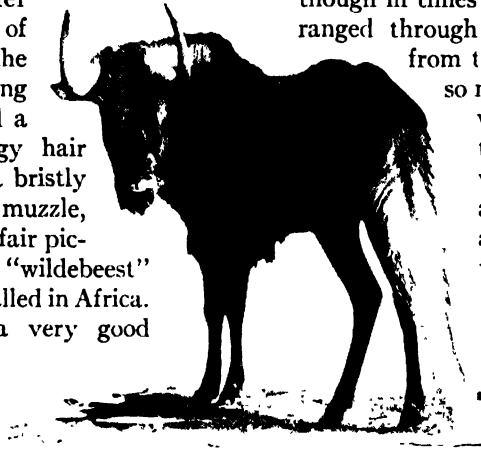


Photo by N. Y. Zoological Society

Here is the white-tailed gnu, better known as the black wildebeest. No one could call this creature handsome, but he has at least the advantage of being sturdy and surprisingly fleet of foot.

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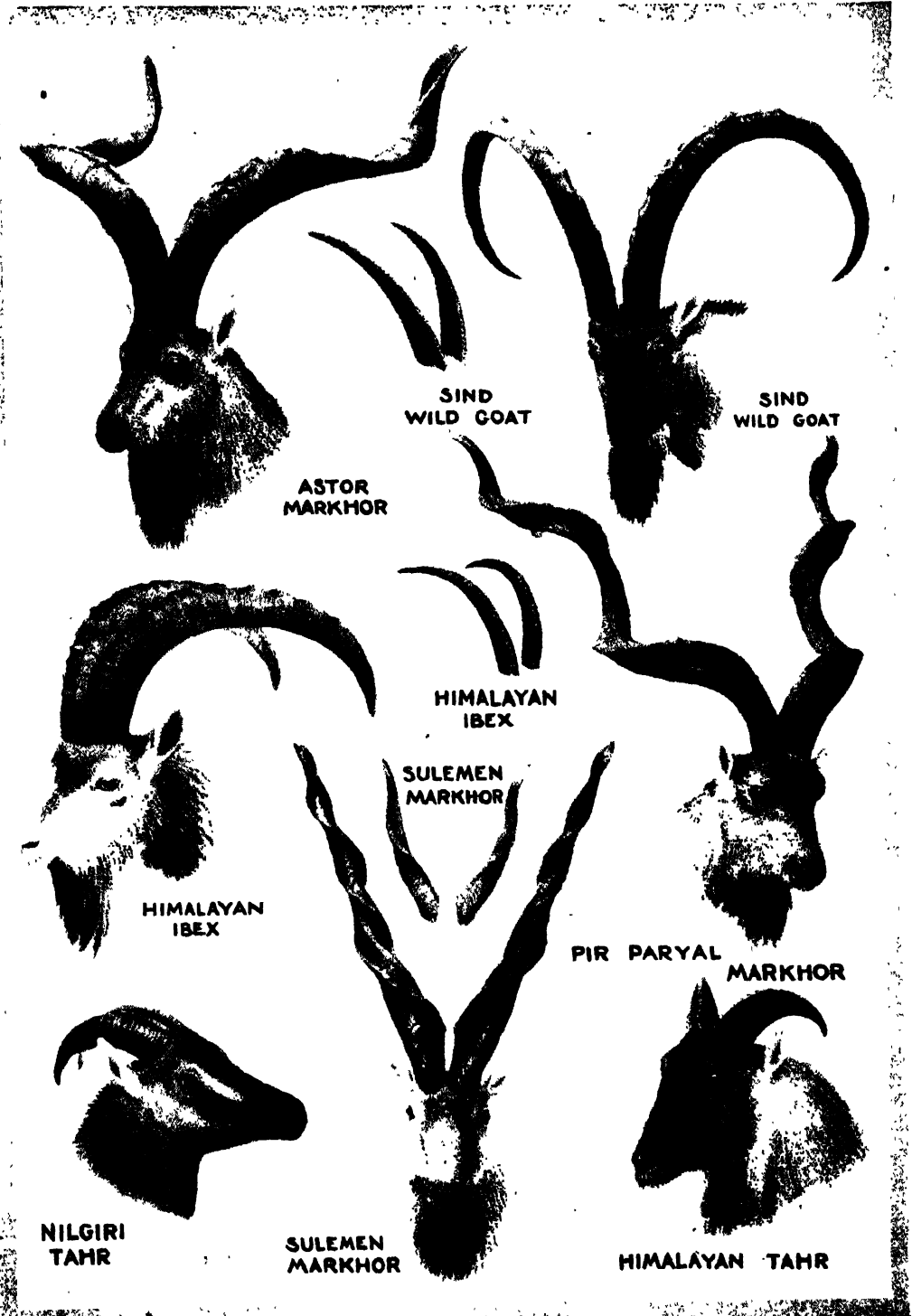


Photo by Field Museum

On this page are some of the elaborate horns which Nature gave the goat for his protection.

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like a most uncomfortable manner. But the saiga seems quite happy and contented. It is a gentle beast. The natives of Siberia frequently make a pet of it, and it will follow its master about like a dog. The female saigas have quite ordinary noses. It is only the male animal that is distinguished in this peculiar way.

The American antelope, or the "pronghorn," as it is more often called, is not a true antelope, though it is nearer to an antelope than to any other kind of animal belonging to the cattle tribe. It has hollow horns, but they are divided near the top into two branches, or prongs—more like the antlers of a deer. It sheds its horns, too, once a year as a deer does, and they are replaced by a new pair which have been growing up beneath the old ones.

Pronghorns are pretty, graceful creatures not quite three-feet high at the shoulder. They are dressed in pale, yellowish-brown coats and have dark patches on their faces, while their throats, waistcoats, and a patch on each flank are snowy white. They are very restless, always roving over the plains or through the sheltered valleys among the hills of Northwest America. Their lovely dark eyes are wonderfully far-sighted and their hearing is very keen. When feeding or resting, some of the herd are always on the alert, watching and listening. At the first sign of danger the sentinels stamp their feet to warn the rest, and at the same time erect the snowy patches of long hair on their hind quarters. These patches stand out like great white disks, plainly to be seen a long way off.

When this warning message is flashed to

the scattered herd, all the pronghorns obey the signal. In a twinkling all the young bucks, the gentle does, and the little fawns gather together and follow their leaders to safety.

In the spring, when the fawns are born, the does leave the herds for a time to look after their little ones

in some sheltered spot where

they may be fairly safe

from prowling beasts of prey. The fawns

are sturdy babies,

and in a few

weeks their slim

little legs are

quite strong

enough to trot

after their

mother wherever

she goes. Then the

does return to the

herd, bringing

the new fawns to

their companions.

The tiny things soon

get over their shyness

and begin to skip about and

play together. And before long

the whole troop—bucks and does

and fawns—set out on their travels,

roaming far and wide over the

free, open spaces until winter

comes. Then they seek the shelter

of the valleys once again.

Another somewhat puzzling

hoofed animal, who does not

seem to be able to make up its mind to which

family of the cattle tribe it really belongs, is

the light and airy chamois (shām'y) that skips

gayly from crag to crag on the rocky heights

of the Alps and of most of the higher mountains

of Europe. It is sometimes called a

goat and sometimes an antelope, but is more

usually described as a "goatlike antelope,"

which is perhaps the best we can do for it.

The chamois is a dainty little animal, about

as big as a goat. It has a coat of chestnut

brown marked with a dark stripe down the

back. Its face is white with a dark mark

on each side, and from its forehead sprout



Photo by N. Y. Zoological Society

The chamois lives in the mountains of Europe and Asia Minor. He is a goat-like creature with remarkable leaping powers and an ability to climb cliffs that are almost vertical or to race along narrow ledges overhanging deep precipices.

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Photo by Field Museum

These are the mountain sheep which Marco Polo, the greatest traveler of the Middle Ages, saw on the high

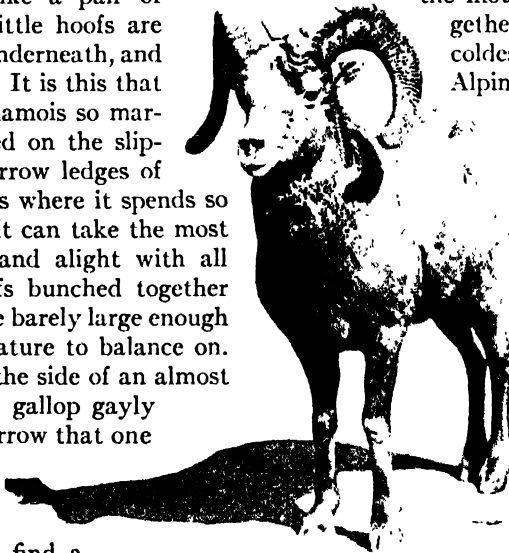
plateau of the Pamirs as he was journeying to the court of the great Mongol emperor, Kublai Khan.

small, straight horns which suddenly bend over at the tip like a pair of hooks. Its neat little hoofs are slightly hollowed underneath, and have a raised rim. It is this that makes the little chamois so marvelously sure-footed on the slippery rocks and narrow ledges of the high mountains where it spends so much of its life. It can take the most astonishing leaps and alight with all its four little hoofs bunched together on top of a pinnacle barely large enough for the nimble creature to balance on. It will slide down the side of an almost perpendicular cliff, gallop gayly along a ledge so narrow that one would have thought no animal larger than a rat could possibly find a foothold on it, climb to the giddiest heights, and stand on the slippery edge of the most appalling chasms with perfect steadiness and unconcern.

In the winter months the chamois descend wild goats are

to the wooded slopes on the lower levels of the mountains, where they live together in small herds through the coldest months and feed upon the Alpine plants. But as soon as the weather gets warmer, the herds break up. The does with their fawns skip about on the mountain side all through the summer, while the bold bucks ascend to the highest peaks of the mountain tops and indulge in their favorite Alpine sports right up on the borders of the glaciers and snow fields.

No one would be likely to mistake a sheep for a goat in a meadow; but anyone might mistake one for the other if he met them roving free, as wild sheep and goats do, over the hills and far away. For wild sheep and really very much alike.



Photos by N. Y. Zoological Society

As you perhaps know, this wild sheep of the mountains has a tough, hairy coat which is of little commercial value. It has taken centuries of careful breeding to produce the plump sheep whose soft, woolly coat is so necessary to our warmth and comfort.

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Here are some varieties of the bighorn mountain sheep which are found in Mexico, California, and as far north as the Arctic Ocean. They live on high ground in rocky places and feed on the scanty grass, mosses, and lichens.

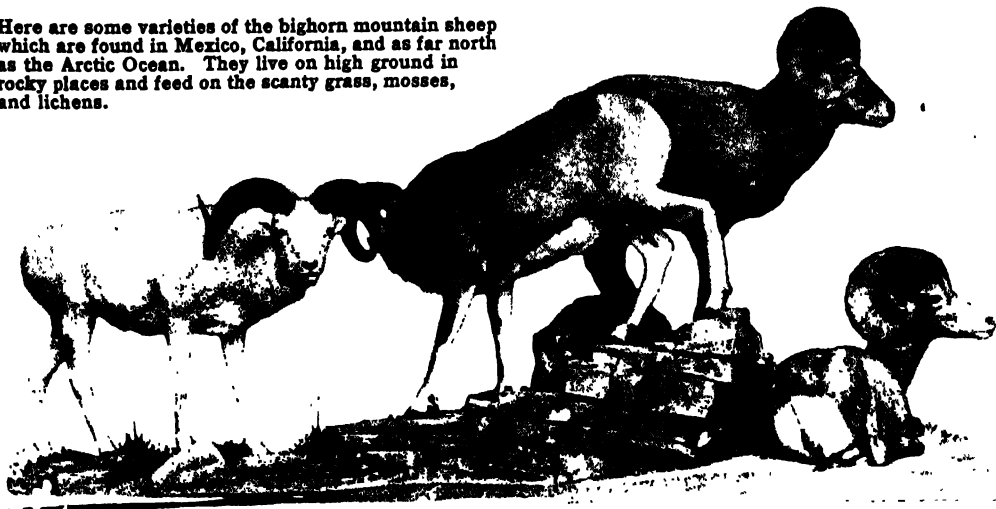


Photo by Field Museum

Both have horns, of different shapes and sizes, and both are clad in hairy coats. For it is only domestic sheep that have woolly coats; and if they went back to a free, wandering life they would soon lose their thick, fleecy covering. To be sure, goats are distinguished, as a rule, by their fine beards; but some sheep have beards too, while there are a few goats that have none. In their habits, too, the wild sheep and goats are very much alike. They like to live up in the wilds, and are often to be found quite at home on the most inaccessible mountain peaks and steep rocky ledges.

The bighorn, or mountain sheep, which haunts the rugged hills and high plateau lands of the Rockies, is one of the giants of his kind. The ram is a splendid fellow, as big as a small donkey, with a fine pair of wrinkled horns which curl quite around in a circle. The ewe has horns, too, but they are short and stand erect with a slight backward curve.

Flocks of bighorns, led by one old ram, wander over the slopes of the high mountains right up to the edge of the snow fields. There,

This handsome fellow with his beautiful fringed shirt front is a Barbary sheep from North Africa. The males are very warlike and are forever butting at anything that annoys them. When they are in captivity it is hard to keep their fences in repair.

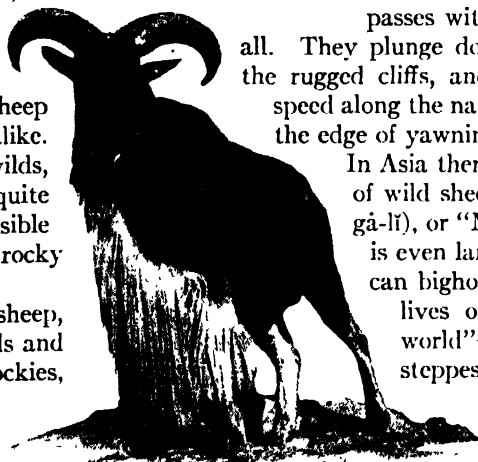


Photo by N. Y. Zoological Society

in little danger of the wolves and bears that prowl about on the lower levels, the sheep contentedly crop the grass and lick the salty clay, seldom leaving their strongholds unless driven down by snow. They spring and bound with surprising agility, even the tiny lambs following their mothers over the steepest passes without any trouble at all. They plunge down precipices, scale the rugged cliffs, and run safely at full speed along the narrowest pathways on the edge of yawning chasms.

In Asia there are several species of wild sheep. The argali (är'-gä-lī), or "Marco Polo's sheep," is even larger than the American bighorn. This fine fellow lives on the "roof of the world"—as the bleak Pamir steppes of Central Asia are called—and has an enormous pair of curling horns fully two yards long, coiled up in a circle.

The Barbary sheep—the only wild sheep in Africa—are much more like goats than sheep. The rams have great curved horns and long shaggy beards which hang down below their knees. They live in small flocks high up on the slopes of the mountain ranges

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Photo by N. Y. Zoological Society

Unlike most wild goats, the tahrs have short horns and no beards. They live in wild, mountainous regions and are so hardened to cold weather and heavy snows

and so clever in passing swiftly over difficult rocky ground, that it is no wonder the natives think that a meal of tahr meat will cure the worst rheumatism!



Photo by Field Museum

The Rocky Mountain goat is not a slender, graceful creature like the antelope, but his jet-black horns and

hoofs are in pleasing contrast with the handsome white coat he wears all the year round.

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between Egypt and Morocco, where the color of their coats matches the dull gray rocks so well that they are practically invisible so long as they keep still.

The sheep make good use of this fact. If a hunter appears when they are resting quietly in the shadow of the rocks, they do not give themselves away by springing to their feet and dashing off in a panic. They lie perfectly motionless until the danger is passed. If they are surprised when feeding on the scanty herbage of the mountain side, the sheep bound away, making swiftly for the lofty heights where no man can follow them.

Europe has only one species of wild sheep. It is called the moufflon (mōōf'-lōn), and it lives on the mountain slopes of Corsica and Sardinia. The moufflon is a goatlike animal, very fleet and sure-footed, and is especially interesting because it is believed to be the ancestor of all our useful and gentle domestic sheep.

The goats are all Old World animals. The white mountain goat of America is not a true member of the goat family; like the little Alpine chamois, it is related to the antelopes on one side and to the goats on the other. It is a large and rather strange-looking animal, with humped-up shoulders, slender horns, and a short beard on its chin, and it is clothed in long white hair which hangs down all around it like a long white petticoat. Like the bighorn, the mountain goat lives high up on the Rockies and the Cascade Mountains; and even in the most severe weather it seldom seeks the shelter of the lower slopes. There is very little grass for the goat to eat up there, and it seems to feed almost entirely on the dry gray moss

that grows here and there on the bare rocks.

Living in such an out-of-the-way part of the world, the white goat has little to fear from beasts of prey or hunters, and when a man does invade its mountain fastness it will stand and gaze at him in surprise until he is quite near. Then, in sudden alarm, the goat gallops

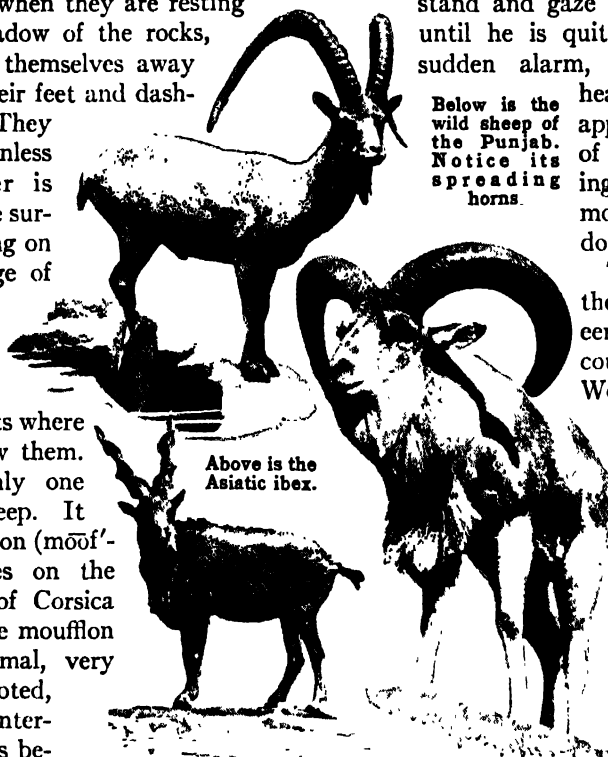
heavily away or disappears over the edge of a precipice, jumping twenty feet or more to a foothold down below.

The true goats are the hardy mountaineers of most northern countries of the Old World. All are wonderfully nimble, sure-footed folk, making their homes in the wildest, most rugged mountain ranges, where few four-footed or two-footed enemies are able to follow them. Yet they take no risk of a surprise attack. Poised high

on a rocky peak, the sentinel of a flock may often be seen keeping watch while his companions feed at their ease, his big horns outlined against the sky as he surveys the world around and beneath him to make sure that all is well.

The Noble Markhor, King of the Goats

King of the goats is the great markhor (mār'kōr), a truly noble fellow with an enormous pair of horns twisted round and round like a corkscrew standing up on the top of his head. High up between the timber line and the snow fields on the Himalayas, the markhor is monarch of his mountain fastness. Each buck proudly leads his flock up and down the steepest slopes and over the most dangerous jagged rocks, challenging any



Below is the wild sheep of the Punjab. Notice its spreading horns.

Above is the Asiatic ibex.

The markhor goat has the most interesting horns of all. Nature must have been in a very fanciful mood when she made these beautiful twists and spirals.

Photos by Field Museum and N. Y. Zoological Society

SOME KINSFOLK OF THE DEER

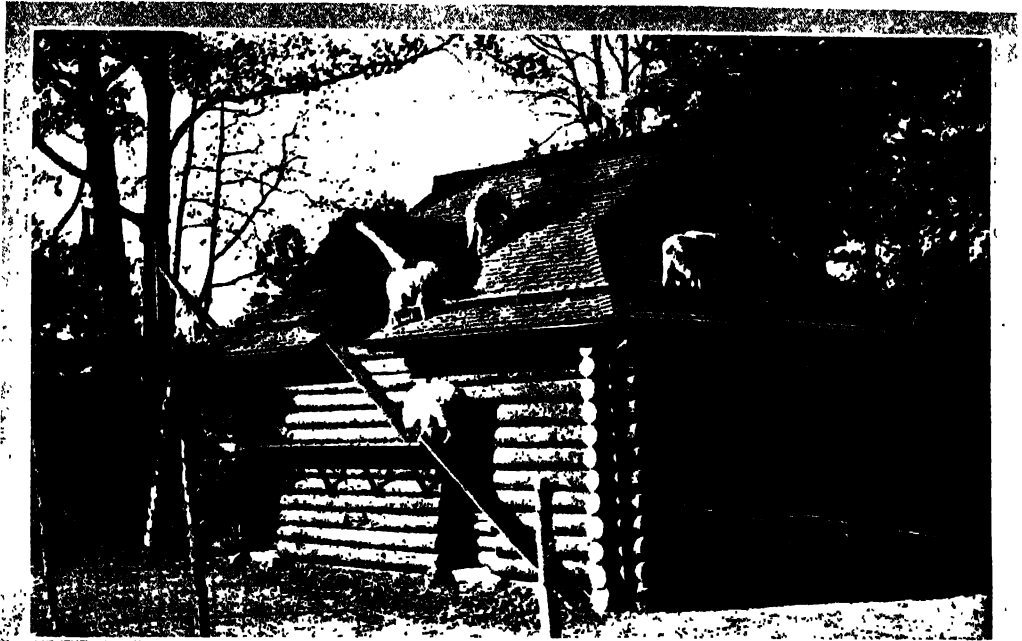


Photo by N. Y. Zoological Society

These Rocky Mountain goats in the zoo do not thrive on the rocky heaps which have been built for their

cousins the sheep. What they really enjoy is scrambling over the roof of their home.

other leader he meets by the way to mortal combat if he is defied. Sometimes most terrific battles take place between rival bucks. They clash their horns together and stamp their feet, each one doing his best to butt his opponent over the edge of a precipice.

The Himalayan ibex (*ibēks*), another fine wild goat, ranges over the mountains of Central Asia. His horns are shaped like scimitars, ornamented with a row of curious knobs all along the outer edge; and he cares little for the frost and snow, for he is well wrapped up in a thick warm undercoat beneath his top coat of light brown hair.

The ibex is a cautious fellow. He leads his little band of followers over the highest levels of the mountain ranges, where he can keep a sharp lookout for the

dhole and the snow leopard, which are about the only foes he has to fear.

The Persian ibex, the Spanish ibex, and the Abyssinian ibex are all fine goats with the same scimitar-shaped horns as their cousins of the Himalayas. They all live up on the mountain tops or in the woods and scrub of the steep hillsides, where

they leap and bound in a marvelous way, plunging down precipices and scaling almost perpendicular heights as easily as you can run up and down stairs. If captured while it is a kid, an ibex makes a charming pet. It grows wonderfully

tame, will run to meet you with an affectionate "ba-a-a," and fol-

low you everywhere if it is allowed to.

The only trouble with an ibex is that you simply cannot keep it within bounds. You may give it a fine large paddock to roam about in, but you must not

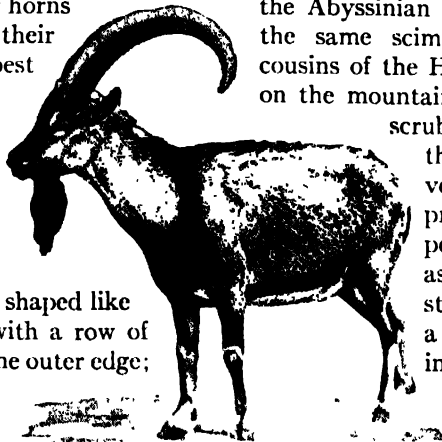


Photo by N. Y. Zoological Society

All ibexes have knobbed horns that are curved like scimitars, but this Spanish ibex also boasts a noble beard.

SOME KINSFOLK OF THE DEER

think for a moment that it will stay there. It will spring over any barrier, however high, and wander off at its own sweet will. You may find your pet munching the cabbages in your neighbor's garden or skipping about on the roof of a house, where it has planned to spend a happy day.

Among the wild goats we find several strange animals that do not look like goats at all. There are the tahr, which live in the wooded regions of the Himalayas and do not show themselves until late in the evening, when they come out to graze on the steep grassy slopes. They are heavy-looking animals with long rough coats, no beards, and a thick shock of hair like a lion's mane falling over their shoulders.

Even more curious are the serows (sēr'ō)—clumsy, donkeylike creatures with coarse, shaggy coats and a heavy mane. They live on the hills of Kashmir and in other mountainous regions of Asia. The serows are not nearly so light and nimble on their feet as most goats are, although they can dash at high speed over the roughest ground. Indeed, the steeper and stonier the track, the

more the serows seem to like it. They are bold and fierce, too. They will fight to the death when attacked by the savage red hunting dogs; and if brought to bay by a hunter, they will turn and butt at him with their sharp, curved horns.

Still more curious is the takin (tä'kēn')—another of those strange beasts that look like a mixture of several different kinds of animals. The takin is quite as big as a donkey, and has a head like a cow, a tail like a goat, short thick legs, and a thick, shaggy brown coat tinged with black and red.

Takins live in herds, so high up on the mountains of Tibet and Northern China that they are very seldom seen. They are nervous, restless animals, always wandering from place to place. If startled they give a queer cry—half bleat, half bellow—and away they all dash, tearing madly one after another in single file as if they were playing follow my leader. They never look where they are going, and if in this headlong flight the leader jumps over a precipice—as he may well do in his fright—all the rest of the herd will jump after him.

This pretty white mother goat with her charming baby is not one of the wild things we have been describing. She is a domesticated goat, one of those barnyard creatures that we always associate with a delicate diet of tin cans and shirts "from off the line"!



MAMMALS

Reading Unit No. 16

THE WILD COUSINS OF THE PIG

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

How pigs are different from other mammals, 4-432
The wild boar and his dangerous tusks, 4-432-33
The ugliest of them all—the wart hog, 4-433-34
Why all animals flee from pec-
caries, 4-436

The hippopotamus—a four-ton pig, 4-436-39
The daily life of a hippo, 4-436-39
How hippos use their teeth, 4-437
Pigmy hippos, 4-439

Things to Think About

How do pigs get their reputation for being dirty?
What kind of food is eaten by wild pigs?

How long can a hippo stay under water?
How much food would a captive hippo need every day?

Picture Hunt

Where did our domestic pigs come from originally? 4-434
Compare the peccary with the domesticated pig. 4-434
How many babies does a pig

often have? 4-435
How is a hippo's head adapted to life in the water? 4-437
Why is it so hard to hunt hippos? 4-439

Related Material

Why is the meat of pigs valued? 9-317
How much pork is produced an-

nually in the United States? 9-318

Leisure-time Activities

PROJECT NO. 1: Visit the zoo at feeding time. Learn what food and how much a hippo eats.
PROJECT NO. 2: Study the

hippo's head in pictures or at the zoo; notice it when it projects just above the water. 4-437

Summary Statement

Wild pigs do not chew the cud as cows do. They have sharp teeth and tusks which can kill a tiger. The domesticated pig was

derived from wild ancestors. The hippo, strangely enough, is also a pig.

THE WILD COUSINS OF THE PIG

Our hippo is not angry; he is merely a trifle sleepy; and not being very well brought up, he makes no effort to conceal the fact. Of course you really can't blame the poor fellow for yawning when he has just been waked up from a nap to have his picture taken.

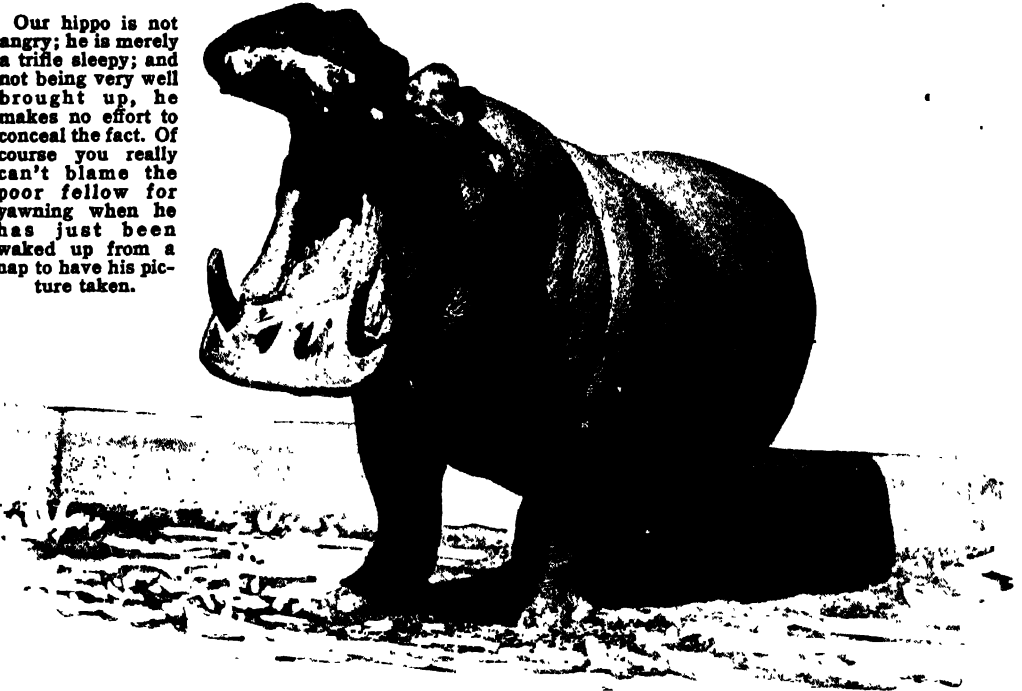


Photo by N. Y. Zoological Society

The WILD COUSINS of the PIG

Seldom Very Handsome, Often Very Fierce, They Include the Wild Boar, the Wart Hog, the Peccary, the Hippopotamus, and Various Other Beasts

PIGS are not very popular animals. People call them greedy pigs, dirty pigs, and lazy pigs. But this is not quite fair. Pigs are naturally as cleanly in their habits as most other animals, though they do enjoy a good roll in the mud. If they are dirty, it is the fault of their owners. How can they be clean if they are kept penned up in dirty sties? And if they are greedy and lazy, what can you expect when they have no chance to do anything but gobble their food and then lie down and grunt and grow fat on their beds of mouldy straw?

Wild pigs are neither dirty nor lazy. They have to find their own food, and are kept much too busy rooting about for it to have time for growing fat like the farmer's pigs. But wild or tame, the pigs are all somewhat heavy, clumsy-looking animals, with long

snouts which they use to turn up the soft ground in search of roots, and small cloven hoofs, divided into two halves like the hoofs of animals that chew a cud.

But pigs do not chew the cud like the oxen, sheep, goats, antelopes, giraffes, and deer. Pigs belong to the hog tribe. They, and all their many relatives, are well supplied with teeth, and they bite and chew their food in the usual way.

Wild swine of many kinds roam in the forests and marshy lands of Europe, Africa, and Asia. Largest and fiercest of his kind is the Indian wild boar—a big, bold fellow with a shaggy coat, a thick, bristly mane, and a crest of stiff hair reaching halfway down his back.

The wild boar is a dangerous fellow to encounter in the Indian jungles, for he is one

THE WILD COUSINS OF THE PIG

of the boldest and most savage creatures in the whole of the animal world. He fears neither man nor beast. Armed with a pair of fearsome weapons, in the shape of two long curved tusks with edges as sharp as the blade of a knife, he dashes with a squeal of rage at all who dare to meddle with him. A wild boar will even challenge a tiger; and although he

fish out of the mud when the pools dry up in the hot season, devour large quantities of wild fruits, and do a great deal of mischief by tearing up and trampling down growing crops of all sorts in the fields around the native villages.

The wild boar is a selfish, unsociable beast. He lives alone and takes no interest in his family. But the sow is usually surrounded by a whole troop of squealing piglets who trot about after her wherever she goes. The

sow makes a rough kind of nest for herself and her young ones by tearing up great quantities of coarse grass, raking it all into a heap, and then burrowing underneath it. Here she and her large family are sheltered in the daytime from the burning rays of

often pays for his rashness with his life, if he is quick enough to get in one of his terrible slashing blows before the tiger strikes him down, the boar may actually kill the great cat.

The boar's tusks are simply two very long teeth in his upper jaw, which project on each side of his snout and curve upward instead of downward in the usual way. They go on growing as long as the animal lives; and by grinding against them the lower teeth keep them always sharp and prevent them from becoming inconvenient by growing too long.

The wild sow is as bold and fierce as her mate, and although she has not such big, cruel tusks she can bite hard and wound her enemies badly with her sharp teeth.

Like all pigs, the wild swine are always hungry and will greedily gobble up everything eatable they can find. They root about in the earth for roots of all descriptions, dig



Here are some wild members of the pig family. At the top is the babirusa, a strange animal with curving tusks which grow through his upper lip. In the center is the hairy little bush pig; and to the right, the red river hog. This last gets his name from his bright reddish-brown coat and from the fact that he is usually found near a river bank. His home is in the forests and jungles of Africa.

Photos by N. Y. Zoological Society

the sun, and at night they lie safely concealed from prowling beasts of prey who would very much enjoy a plump young piglet for supper.

None of the pig tribe can be called handsome, but by far the ugliest of them all is the extraordinary wart hog of East Africa. It is a really hideous animal. It has big warty lumps on its broad, flat face and an enormous pair of tusks, while a straggly mane of limp bristles adorns its neck and shoulders and flops over its eyes.

THE WILD COUSINS OF THE PIG



These domesticated pigs may look hungry, but they are much better fed than their ancestors were. They are direct descendants of the wild pig, who had to do

Except for this untidy-looking mane and a tassel of hair at the end of its long, wispy tail, the animal's skin is almost bare, and so dark in color that the creature is sometimes called the black hog. It is a very savage beast, though not nearly so courageous as the Indian wild boar. It would rather run than fight any day—and a wart hog fleeing for its life is one of the funniest sights in the world. Its very short neck and the big lumps in front of its eyes prevent the queer beast from looking round to see if its enemies are overtaking it or not. So, as it gallops madly along, it lifts its snout high into the air and looks backward over its shoulders, while the ridiculous tassel at the end of its long, upright tail waves wildly in the rear.

With nose and tail in the air the wart hog dashes frantically for home. Once safely inside, he crouches down with his ugly face blocking the entrance to his burrow, and presenting his fearsome tusks to his pursuers, dares them to come on. Very few animals are rash enough to accept the challenge, for the tusks are deadly.

Africa is the home of several other wild pigs besides this

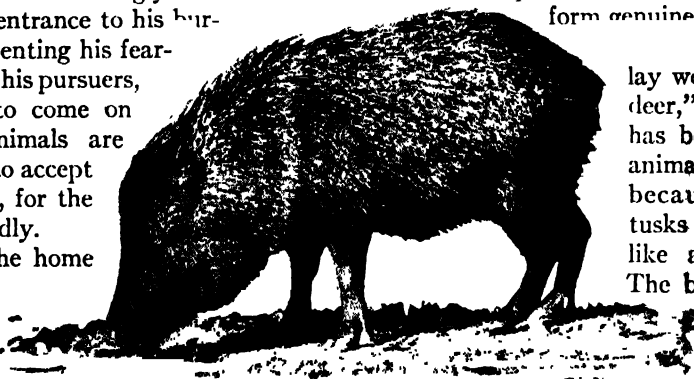
a great deal of grubbing and scraping before he could get anywhere near enough to eat. No nice dinner pails full of fattening food ever came his way!

unpleasant fellow, and among them all there is only one that has any claim to good looks. This is the red bush pig, who boasts a smart red coat shaded with yellow, trim black legs, white cheeks, and white rings round its eyes.

The smallest pig is the tiny pigmy hog that lives in the Himalayan forests and is not much bigger than a hare. And one of the strangest of the tribe is the babiroussa (bāb'ī-rōō'sā) of the Malay Archipelago.

The babiroussa is not nearly so piglike as most of the hog tribe. It is not so stout, and has a small head with a long, pointed snout, while its skin, which is almost bare, is a queer bluish color. But the most curious thing about the babiroussa is its tusks. They grow upward through the animal's lip and then curve backward, coiling round like a spring. In some cases the points of the tusks pierce the skin of the snout and form genuine rings on its nose.

The peccary is a bristly, pig-like animal of the New World. He is a savage little creature, but if caught when quite young is easily tamed



lay word meaning "pig deer," and the name has been given to the animal by the natives because its curious tusks look somewhat like a deer's antlers. The buck has four of these tusks, which are of pure

THE WILD COUSINS OF THE PIG



Photo by J. G. Allen

It would be hard to say just how many piglets this Berkshire sow has to bring up. She probably has lost

count herself. Some pigs have as many as twenty, or even thirty, children at once!

ivory, but the sow is not provided with the strange ornaments.

In their ways and their manners babiroussas are very much like other wild pigs. They live in damp forests, near the riversides, where they root about and wallow in the mud just as all their relatives do. The sow does not have a whole litter of little piglets at a time, as most pigs do. Twins are enough for her! She takes great care of her two babies, and for the first few days after they are born keeps them hidden away in a hole in the ground, on a nice soft bed of leaves. But the young babiroussas do not stay long in their cozy nursery. As soon as they are able to stand up on their tiny hoofs they come out to see what the world is like. Down by the banks of the river they patter about after their mother, squealing and snuffing and rolling in the mud like all little pigs the world over.

American wild pigs are called peccaries (pĕk'ă-rĭ). They are not quite like their cousins of the Old World. They have big sharp teeth, but these do not grow into long tusks. They have three toes instead of four on their hind feet, and under the skin in the middle of the back the queer little animals

have a small pocket filled with a most unpleasant, oily substance with a strong, musty odor. The peccaries, however, do not think it unpleasant. They seem to like the horrid scent very much, and they often rub their snouts on one another's backs, the better to enjoy the odor.

There are two kinds of these piglike animals—the collared peccary and the white-lipped peccary. Both have rough coats of stiff, bristly hair; but the collared peccary is brown with a broad yellowish stripe around its neck, while the white-lipped fellow is dark gray with white lips and large white patches on its lower jaw.

Collared peccaries live in the forests between Arkansas and Texas, as well as in most parts of South America. They make their homes in holes in the ground or in hollow trees, or they trample down a bed for themselves in the middle of a tangle of bush or coarse grass. They do not stay very long in any one place, however, for peccaries are restless creatures, always on the move looking for something to eat. They turn up the soil with their snouts in search of roots and worms and insects, gobble up all the fallen

THE WILD COUSINS OF THE PIG

wild fruits, and crack the hard seeds of the palm trees in their strong jaws. Like all the pig tribe they are always hungry, and when food is scarce they often travel long distances through the dense forests in their hunt for



Here is the African wild swine. He may look sleepy and docile, but he is not at all like that when he is disturbed.

Photos by N. Y. Zoological Society

fresh supplies.

Peccaries are not very big, but they are as fierce and bold as any wild hunter of the animal world.

They go about in small roving bands; and although, as vegetable feeders, they do not hunt other animals for food, they will savagely attack any living creature that they suspect of trying to interfere with them.

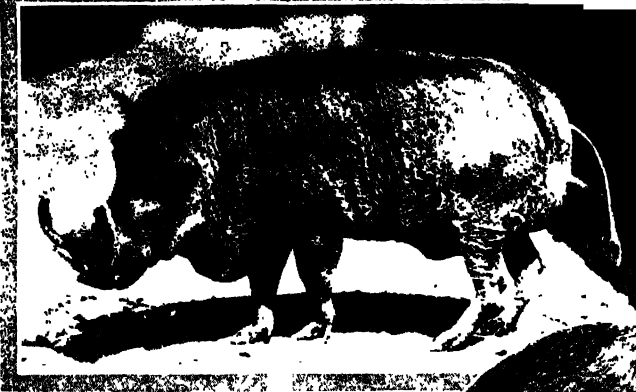
The white-lipped peccary is even a more dangerous animal than his cousin with the broad yellow collar. He does not venture so far north, but confines his wanderings to the wilds of South America. Large herds of these savage little beasts range through the deep, dim forests, waging war upon everything they meet. With flashing eyes and gnashing teeth the whole mob will recklessly hurl themselves at any creature who stands in their way—however big and strong he may be. Hunters are forced to find refuge in the trees until the furious little warriors have taken their departure, and cougars and jaguars flee for their lives before the wild onslaught. A jaguar might deal

with four or five peccaries at a time, but two or three dozen of the squealing little brutes biting and tearing at him on all sides is more than he can tackle, powerful beast as he is.

So instead of dashing boldly into the midst of a mob of peccaries, the cougar and the jaguar follow the herd at a discreet distance and content themselves with seizing any straggler that lags behind the rest of the party.

The giant of the hog tribe is the great hippopotamus who lives by the lakes and rivers of Africa—the home of so many of the giant beasts in the animal world.

Old "hippo" is an extremely odd-looking fellow. Although not quite so big as a rhinoceros, he is actually heavier. His huge, bulky body looks like nothing quite so much as a barrel on four legs; and if we weigh him, we shall find that he



The wart hog is quite the ugliest of the pig family; and his temper is as unpleasant as his looks.



This wild boar, unlike the wart hog, is well covered with hair.

turns the scales somewhere between three and four tons.

As he waddles about on dry land the hippopotamus is as awkward and ungainly an animal as can be found. His thick, stumpy legs seem much too small to support his enormous weight, while his huge head is so heavy that he nearly always rests the end of his great swollen muzzle on the ground when he is standing up or pottering around.

But the old hippo does not spend very much of his time on land. He practically lives in the water, where he is quite at his

THE WILD COUSINS OF THE PIG

ease. He can swim or float or walk about at the bottom of the river just as he chooses, and he can stay down below for five or six minutes at a time without feeling in the least uncomfortable. In fact, he seems to like it.

When he takes a stroll under water along the bed of a river the hippopotamus closes his ears and his nostrils to keep the water from flowing in and drowning him, but of course he is obliged to come to the surface every few minutes to fill his lungs with a fresh supply of good fresh air.

When he swims or merely rests in the river, there is little to be seen of the huge fellow. He just floats in the water, with only a strip of his broad back, his small, upright ears, his nostrils, and his round, showing above the surface. His eyes and his nostrils are all set in a line with the top of his head; so he can hear and see and breathe quite comfortably while his bulky body is submerged and hidden from view.

Except for a few stiff bristles on his face and neck and tail, the strange animal's skin is quite bare; but his dark slate-colored hide

is so enormously thick that he is very well protected; and of course in the water he does not need a hairy coat.

When he yawns, as he often does—for our bulky friend seems a very lazy beast—the hippo opens his mouth so wide that you would think his great head must split in half. At such times his appearance is truly alarming. His great red cavern of a mouth is full of gleaming teeth, and the big curved tusks on either side are enough to frighten anyone.

Yet these fearsome teeth are seldom employed as warlike weapons; the hippopotamus uses them chiefly for tearing up water weeds and mowing down the reeds and grass growing on the river banks.

Only when wounded or thoroughly irritated does the hippopotamus turn to rend his enemy. Then indeed he is not to be trifled with. An angry hippo has an unpleasant way of diving under a boat and upsetting all the people in it; and he is quite capable of crushing a native canoe with a snap of his powerful jaws. It is only when he is in the water that the hippo is at all dangerous. He is quite harmless when he is promenading about on the banks



Photo by Visual Education Service

You may think that the hippopotamus is an ungainly creature, but you will have to admit that he is beautifully built for the life he leads. His eyes, ears, and nose are placed on a line, so that he can keep them all out of water at the same time and still be practically submerged.

The hippopotamus spends most of his time in the water, but at night he often takes long walks in search of food. His name comes from the Greek, and means "river horse," though it is easy to see that the lumbering fellow has nothing in common with our swift and intelligent horse.

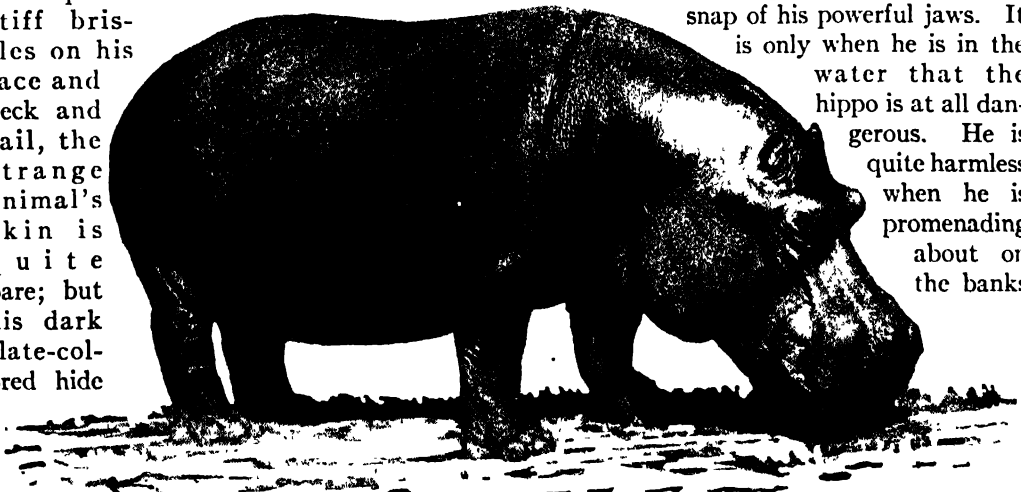


Photo by N. Y. Zoological Society

THE WILD COUSINS OF THE PIG



Photo by Nature Magazine

"Open wide, please!" Poor Mr. Hippo has a toothache—which is no joke when you have big teeth like his!

of the river, and will plunge with a snort of alarm into the thick tangles of reeds and grasses to hide himself if he meets a hunter.

Hippos are sociable folk. They like company, and as many as twenty or thirty, of all ages and sizes, often live happily and contentedly together. As a rule they are good-tempered animals, though the young bulls are likely at times

He is really very lucky, however, for in his natural state he would have found no dentists to relieve him.

to grow jealous of one another, and to upset the rest of the herd by quarreling and fighting among themselves. The creatures' favorite haunts are quiet, shady backwaters, where there is no fear of their slumber being

disturbed. All day long the big, lazy fellows will float in the water or loll about in the mud by the river's brink, dozing and yawning and snorting.

These strange little pigmy hippopotamuses are not quite so fond of the water as their big cousins. They are more like pigs in their habits, and spend the greater part of their time shuffling around on land in search of food.



Photo by N. Y. Zoological Society

THE WILD COUSINS OF THE PIG

Not until after the sun has gone down and the air has grown cool and refreshing do these sleepy animals wake up and bestir themselves. Then one after another the hippopotamuses haul themselves out of the water, and with a great deal of grunting and snorting the whole party marches off to its supper.

Hippos have the most enormous appetites. Five or six bushels of green stuff is quite a moderate meal for an ordinary animal. They drag great masses of water plants up by the roots from the shallow streams and lakes; they tear up large quantities of the reeds and rushes on the banks of the rivers; and they mow down the coarse grass and herbage of all sorts growing on the marshy ground.

So long as they are content with such simple fare they do no harm; but sometimes large herds of hippopotamuses leave their regular feeding grounds and make midnight raids on cultivated lands. The huge lumbering beasts spend several happy hours in the sugar plantations or the fields of rice, maize, and millet, tearing up and devouring the crops wholesale. And worse than all, they destroy much more than they eat, by blundering all over the fields and stamping flat the valuable growing foodstuffs on every side. When, before the break of day, the well-fed hippos tramp heavily back to the rivers, they leave behind a sad scene of ruin and desolation. One would think an army had been camping in the fields!

Occasionally, instead of joining a herd, a solitary pair of hippos prefer to live by them-

selves, perhaps with one baby calf or with two or three bigger children to keep them company.

The male hippo does not concern himself with family affairs, but the female hippo is a most devoted parent. Until her fat little calf is old enough to waddle round after her on its absurdly short legs, she usually keeps it safely hidden in a dark moist tunnel, which she stamps out in the thick tangle of tall weeds and rushes by the river side. And when she goes into the water, baby hippo rests comfortably on his mother's broad back.

Besides the great hippo of the rivers and marshes, who is sometimes called the "river horse," there is a pigmy hippopotamus that lives in the wildest, most unfrequented parts of West Africa. It is very seldom seen. It is a shy, solitary little beast, not much bigger than a fat pig, and it might easily be mistaken for a baby hippo of the giant kind who had strayed away from its mother.

Pigmy hippos go about alone or in pairs. They never live together in herds as their big cousins do. Neither do the queer little animals spend all their days in the water, although they enjoy a mud bath or a swim in the river now and then. At night they wander far and wide through the woods and marshlands, hunting for patches of grass, wild fruits, and young green shoots for supper; then before the sun is fairly up each tiny hippo puts itself to bed for the day in a nice shady spot under a thick clump of trees or bushes, and goes comfortably to sleep until the evening.

These African natives have just brought down a hippopotamus and are proudly surveying their prize. One wonders just how they will get it home.



Photo by Field Museum

Hippopotamuses are not always easy to hunt, for when they are in danger they will take to deep water and hide their noses among the water plants.

MAMMALS

Reading Unit No. 17

THE BIGGEST OF ALL BEASTS

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

The fast-disappearing dugongs and manatees, 4-442
How the whale came to be what it is to-day, 4-442
What keeps whales from freezing to death, 4-442-44
What the "spout" of a whale really is, 4-445

How whales catch and swallow their food, 4-445
Why whales are hunted, 4-446
Different kinds of whales, 4-446-48
Dolphins, porpoises, and narwhals, 4-448

Things to Think About

Why are sea cows helpless on land?
What were the steps in the development of whales as they are to-day?

What do whales eat?
How are whale products used to-day?
What is the future of the whaling industry?

Picture Hunt

Why are whales becoming very rare? 4-441
Why do whales look like fish? 4-443

Why are killer whales able to kill anything in the water? 4-444
How is a whale caught? 4-447

Related Material

How long have whales existed? 3-52
How did the whaling industry influence our purchase of Alaska

from Russia? 8-12
What animal is the chief enemy of the deep-sea squid? 3-171-72

Leisure-time Activities

PROJECT NO. 1: Read Melville's story of "Moby Dick."
This story deals with whaling and

its exciting adventures, 9-365, 13-324

Summary Statement

Whales are not fish. They are giant mammals which have developed flippers, layers of cold-resisting oils, and a breathing

nostril at the top of their heads. The largest ones may be one hundred feet long and may weigh many tons.

THE BIGGEST OF ALL BEASTS



Photo by Canadian Pacific Ry.

No one knows when man discovered how to hunt the whale. It must have been a long time ago, for the whaling industry has been in existence for at least a thousand years. In those far-off days—and even into the middle of the eighteenth century—whalers led a

dangerous life, full of exciting adventures and hair-breadth escapes. Since the invention of the explosive harpoon and the use of the steamboat, man has gained such an advantage over the poor monsters of the sea that the creatures are fast disappearing.

The BIGGEST of ALL BEASTS

Here You May Read about the Life of the Whale and of Some of His Smaller Relatives

YOU must often have noticed that when animals live in the sea they are usually very different from what their names would suggest. Sea lions are nothing but harmless seals. Sea dragons are really a kind of fish. And sea cows are not in the least like our familiar land cows that live in the farmers' meadows. How could they be, when they spend all their lives in the sea and in great rivers in tropical countries? Indeed the sea cows would be very unhappy on dry land, for they could not roam about like real cows, since they have no hind legs, but only a pair of front flippers and a big horizontal tail. With these, however, they can paddle and swim and dive beautifully in the sea, which is their natural home. In shape they look more like a cross between a seal and a small whale than a cow. It is

only because of their habit of feeding entirely upon seaweeds and the roots of river plants that they have been called sea cows.

They are large, harmless, peace-loving animals. They live in quiet, secluded bays on the coasts of many parts of the world, and ascend the large rivers, such as the Amazon in South America, in search of food. Nowadays they are confined to the coasts and rivers of tropical countries. There was one species, called "Steller's sea cow," which formerly inhabited the shores of the Bering Sea, where in large herds it fed peacefully in the great sea meadows of seaweed. But people discovered that the flesh of the harmless and defenseless animals was good to eat and that large quantities of oil could be obtained from the thick layers of fat beneath the sea cow's almost hairless skin. And so

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the herds of Steller's sea cows were ruthlessly hunted down and slaughtered; the last survivor was killed in 1768.

To-day only two kinds of sea cows are to be found; the dugong (*dōō'gōng*), which inhabits the Indian Ocean, the Red Sea, the Persian Gulf, and the north coast of Australia; and the manatee (*măn'ā-tēē*), found off the west coast of Africa and the east coast of America around the Gulf of Mexico and down the shores of Guiana and Brazil. While the dugong seldom ventures far from the coasts, the manatee ascends the large rivers of Brazil and Guiana sometimes far up into the interior.

A Pasture under the Sea

The dugong is a large beast about sixteen or seventeen feet in length, and of a dull gray color. Its flippers are short and broad and are used as paddles, but it is by the vigorous strokes of the broad tail, shaped like a half-moon, that the creature swims rapidly through the water. It has a small, roundish head and rather small eyes.

The dugongs are sociable creatures frequenting quiet shallow bays where there is an abundance of seaweed for them to feed upon. There they swim slowly and allow themselves to sink to the bottom like a lump after coming to the surface to breathe. Like a flock of sheep or a herd of cows, when they have fully cropped one submarine pasture they will migrate to another. They are affectionate and devoted parents, and the mother dugong will defend her young one to the last, and allow herself to be killed rather than desert it.

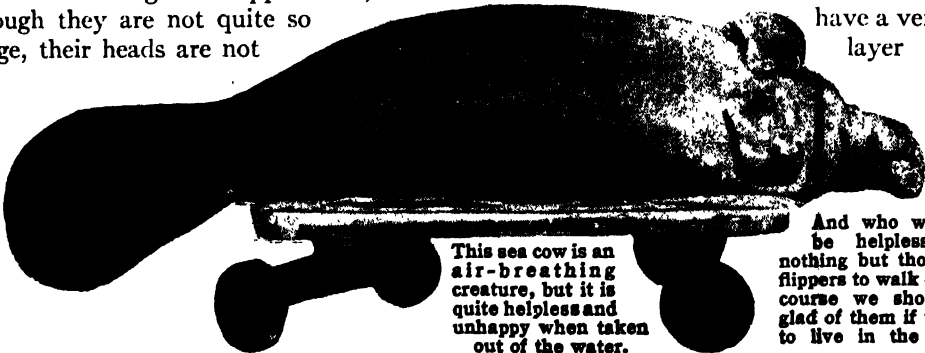
The manatees closely resemble the dugongs in habits and general appearance, though they are not quite so large, their heads are not

so rounded, and their bodies are thicker in proportion. Gentle and inoffensive creatures, they have been mercilessly hunted down for their flesh, oil, and skins, so that they have become greatly reduced in numbers. Unless something can be done to protect them from their human foes it will not be many years before they become extinct.

Although the whales and dolphins look very much like great fishes and are born and spend all their lives in the sea, they are true warm-blooded mammals whose ancestors, so far as we can tell from their fossil remains, were hair-clad, land-dwelling animals. Some of these ancestors of the whale took to spending more and more of their time in the great rivers and seas in those long-distant days. It was their way of escaping from their superior enemies on land. Gradually they spent less and less time ashore, until at last they gave up coming on land altogether, making their home and finding their food entirely in the sea. And so as they no longer had any use for walking legs, their limbs gradually changed in shape until their front legs became a pair of flippers and their hind legs disappeared entirely except for a few quite small, rudimentary bones that are hidden deep in the flesh on the lower side of the body. Their tails developed into a great forked, horizontal, finlike organ called the "fluke," by means of which they are able to swim through the sea.

How Whales and Seals Keep Warm

As a thick, furry coat would be quite useless, that, too, has disappeared, and the whales and dolphins have smooth, glistening skins, entirely hairless. But beneath their thick skins they have a very thick layer of oily

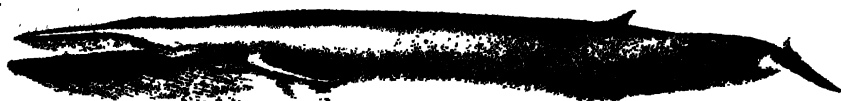


This sea cow is an air-breathing creature, but it is quite helpless and unhappy when taken out of the water.

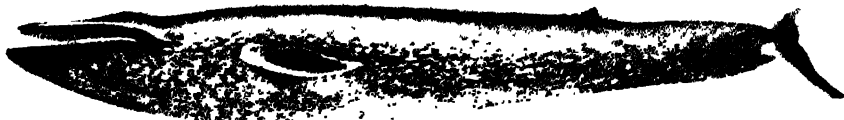
And who wouldn't be helpless with nothing but those tiny flippers to walk on? Of course we should be glad of them if we had to live in the water.

Photo by N. Y. Zoological Society

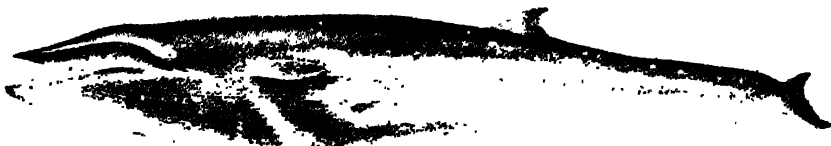
THE BIGGEST OF ALL BEASTS



Finback whale



Blue whale



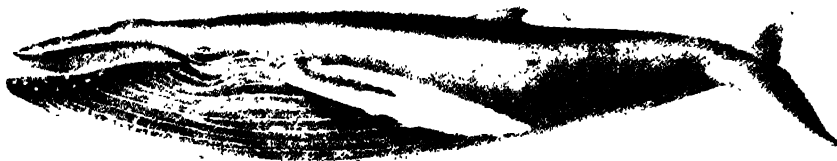
Sei whale



Sperm whale



California Grey whale



Humpback whale



North Atlantic Right whale

Who would imagine that the ancestors of these finny monsters were land animals that walked about on four legs? That they took to the sea and became shaped like fish is one of Nature's marvels.

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Photo Copyright by Herbert G. Ponting, from "The Great White South"

The grampus, or killer whale, is not the sort of animal one would care to trifle with. He is twenty feet long and has an enormous mouth filled with strong sharp

teeth. Usually several killers are found together, as you see in the picture above, and the group will attack anything and everything.

fat, or "blubber," as it is called, which covers the whole of their body and serves as a very effective blanket to keep out the cold.

The Queer Structure of a Whale

Although they are such enormous animals, often with very large heads, the whales have remarkably small eyes. The external ear is nothing more than a tiny circular opening just a little distance behind the eye. But the whales and dolphins appear to have remarkably good hearing and quite good sight, just the same; and it is said that they also have a very keen sense of smell. Their noses are in a different position from those of any other animal, for the opening to the nose is not at the end of the snout but on the top of the head. Now this may seem a very strange place for the opening of a nose to be, but we must remember that these animals are true air breathers, just like any land animal, and that living entirely in the sea and doing a great deal of diving, as they do, it is very necessary that their noses should arrive above the surface of the sea quickly, after a long dive. That is just what happens,

for the opening, situated as it is on the very summit of the whale's head, reaches the surface of the sea before any other part of the body whenever the whale rises to take breath.

A whale is quite incapable of breathing through its mouth as you and I and all the land-dwelling animals do, for that queer nose of his does not open into the back of his mouth as ours does. It is one continuous tube leading straight to his windpipe and lungs. This curious and very special arrangement enables the whale to dive and swim under the water with his mouth wide open. He can capture his prey and feed beneath the surface of the sea without any chance of drowning by his lungs becoming filled with water.

Can a Whale Drown?

As the whale sinks beneath the water, remarkable muscles firmly shut the opening of his nose, so that it is impossible for a drop of water to enter. A whale can hold his breath and stay down under the sea for an hour without suffering any inconvenience.

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As he rises to the surface he discharges the air from his lungs with tremendous force. Now this warm air from his lungs is saturated with moisture which, as soon as it comes in contact with the colder outside air, condenses into visible vapor, just as the moisture in our breath condenses on a cold day. But the whale's breath rises like a beautiful fountain or column of spray above the surface of the sea. It is when he expels the exhausted air from his lungs that the whale is said to "spout" or "blow."

Where Whalebone Comes From

While many whales and all dolphins possess teeth, some whales have none. These toothless whales are known as "whalebone" whales. In place of teeth they have large sheets of horny material, called "baleen" (bā-lēn'), which hang down from the upper jaws as long triangular, flattened plates, the inner edges of which are frayed out into a rough fringe that acts as a strainer when the whale is feeding. These great toothless whalebone whales feed entirely upon quite tiny creatures, chiefly cousins of the shrimps and prawns, that swim in countless millions in the surface waters of the sea. The whale opens its cavernous mouth and fills it with water containing shoals of these small creatures. He then

closes his jaws, raises his tongue, and forces the water out through the fringes of the plates of whalebone. This leaves all the little creatures behind to be swallowed whole, for of course since the whales are toothless they cannot chew their food.

All the whales and dolphins live on various kinds of marine animals. Many devour fishes or the small backboneless creatures that swarm in the sea. Others hunt out and gobble up long-armed cuttlefish of giant size. Only the killer whales hunt and kill and eat other warm-blooded animals. They prey upon the seals and sea lions, and even attack their own relatives, the great whalebone whales. The "killers" hunt in company and might well be called the wolves of the sea.

The Largest Living Animal

The largest whales are truly awe-inspiring creatures, sometimes measuring eighty to ninety-five feet in length and exceeding in size and weight all other animals that have ever existed. Yet with all their great size and strength they are singularly timid, shy creatures, and quite harmless and inoffensive. They are very active and graceful in their movements, turning and twisting, diving and even leaping clear out of the water when at play. For they are very sociable in habit, and in days gone by used to be seen swimming in large herds, or "schools," as they were called, that numbered hundreds. But that wonderful sight no man will ever see again, for modern methods of hunting these wonderful and almost defenseless creatures has so reduced their numbers that they are on the verge of extinction. Besides being sociable, they often display great affection for one another, and the mothers show the greatest devotion to their young, allowing themselves to be killed rather than leave their defenseless offspring.

This zoo attendant is lifting a porpoise, and seems to be having a hard time of it. As a matter of fact, the porpoise does not look especially happy about it either! For it is only in the sea that he can disport himself so merrily.

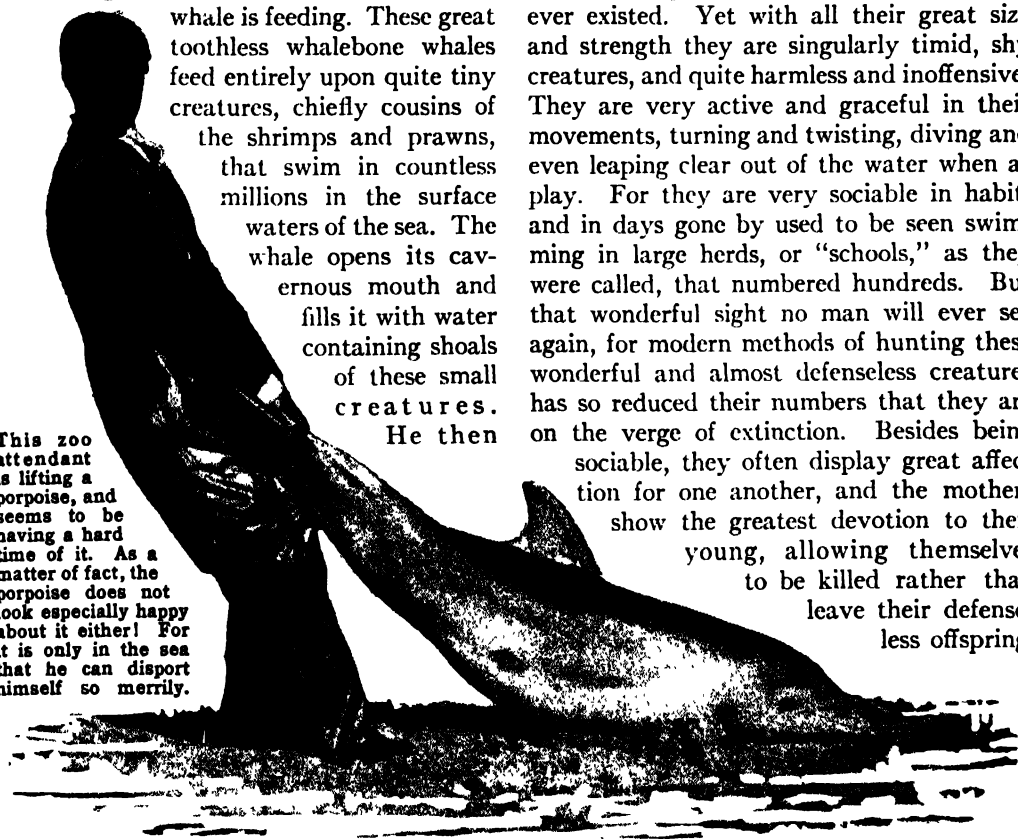


Photo by N. Y. Zoological Society

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Of the toothed whales, the great sperm whale, or cachalot (kāsh'ā-lōt), attains to the greatest size, reaching a length of seventy to eighty feet. It is a vast creature and certainly one of the most curious of the many strange animals that live in the sea. It has a huge head, which occupies one-third of its entire body length and contains an extraordinary receptacle filled with a liquid oil called "spermaceti" (spūr'mā-sē'tī). This great natural cistern is called the "case" by the whale hunters. One of the first things they do when they have captured and killed a sperm whale is to cut this "case" open,

and bail out the contents with buckets. As many as ten to fifteen barrels of oil is a normal amount to obtain from a head of average size. The spermaceti is quite liquid when it is taken from the

whale, but soon hardens on exposure to cold air. In days gone by it was much used in the composition of the best wax candles, but to-day its chief value is as a lubricant for oiling the most delicate kinds of machinery.

Another curious and useful substance found only in the sperm whale is called ambergris (ām'bēr-grēs). This material is very light and buoyant, and is sometimes found floating in large masses on the surface of the sea. It would appear to have something to do with the digestion of food by the whale, for it is often found to contain the "horny beaks of cuttlefish, on which the sperm whale feeds. Ambergris is very valuable stuff, commanding as much as twenty or thirty dollars an ounce. It is purchased by the manufacturers of perfumes, who use it as what is called a "fixative" for their scents—in order to make the perfume more lasting.

The sperm whale has a short, narrow lower jaw furnished with some forty or fifty round, cone-shaped teeth which fit into sockets in the upper jaw. It is probably the possession of these teeth that makes the sperm whale so courageous and formidable. He is a mighty hunter, and engages in truly titanic combats with the giant squids or cuttlefish, often over twenty feet in length, which form his chief food. The front part of the head of an old whale is often deeply scarred with the long gashes he has received in the course of encounters with squids.



Photo by American Museum of Natural History

The eminent scientist Roy Chapman Andrews is shown standing beside the skull of a whale. You may clearly see the whalebone that fringes the whale's upper jaw and serves to strain the creature's food out of the sea water that it takes into its cavernous mouth. Whalebone grows on the jaws of what is known as the right whale.

some unfortunate member of the crew.

The white whale, or beluga (bē-lōo'gā), is almost pure white when fully grown. It never reaches the great size of the sperm whale, but is nevertheless one of the most important members of the toothed whale family, since it furnishes a very large proportion of the "porpoise hide" and "porpoise oil" of commerce. The white whale lives in the colder waters of the North Atlantic and Pacific, rarely being found where the temperature of the sea is much above freezing.

Another toothed whale that is hunted for its blubber and spermaceti is the bottlenose whale, so called from its curiously shaped head. It grows to about thirty feet in

were hunted with harpoons thrown by hand from an open boat. there was considerable danger for the hunter. For the wounded sperm whale would sometimes turn upon his pursuers using

his great tail with appalling effectiveness in delivering smashing blows. Often he charged upon the boat and crushed it to matchwood between his powerful jaws or bit off an arm or a leg of

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Photo by Norwegian Govt. Hys.

This picture was taken on board a modern whaler. The harpoon gun with which the whale is shot is

length, and is very sociable in habit, going about in small herds of eight, ten, or twelve individuals. They show the greatest solicitude for a wounded comrade, and will do their best to help him away from further danger, rarely deserting him until he is dead.

The Greenland Bowhead

The greatest of the "right," or whalebone, whales is the Greenland bowhead, or arctic whale, a gigantic creature which grows to sixty-five feet or more in length. Big as it is, its huge head seems out of all proportion to its size, for it exceeds one-third of the total length of the animal, while its great upper jaw is like an arched doorway screened by sheets of long, black, and very elastic whalebone. These sheets sometimes reach to a length of fourteen feet, and hang down like fringed curtains from the roof of the mouth. The right whale haunts the cold arctic seas, where at one time it was found in large numbers. But it has been so hunted as to have become nearly extinct in the waters around Greenland and Spitsbergen.

The North Atlantic whale is another giant member of the whalebone-whale family. It is some fifty to fifty-six feet in length. At one time it must have been very plentiful, for Basque fishermen from ports in the Bay of Biscay hunted it from the tenth to the sixteenth century, before the discovery of

mounted here, at the end of the boat. In the water is an unlucky whale which has just been pulled in.

the Spitsbergen whaling grounds drew these early hunters northward.

Giants among giants are the rorquals (*rôr'kwäl*)—another branch of the whalebone family. They are popularly called "fin whales" or "finbacks" because they are distinguished by having a small upright fin in the center of the back. These whales have long, slender bodies and narrow flippers, and carry at the throat a large collapsible pouch capable of holding an enormous quantity of water full of countless numbers of small sea creatures on which they feed.

The pouch when extended is supported on bands of tendon, which open out like the ribs of an umbrella. When it has been filled to its utmost limit the whale contracts the muscles of its neck and so forces the water out of its mouth through the sieve formed by the fringes of the whalebone plate. All the little living creatures that the water contained are strained out in this way and swallowed immediately. Then, when the pouch is empty, the umbrella ribs close up and the loose skin lies folded in neat pleats along the whale's throat and chest.

The most gigantic of all these sea monsters is the great blue-fin whale, which enjoys the distinction of being the largest of all living mammals in the world. In the North Atlantic "blue finners" usually measure between eighty and eighty-five feet in length,

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but further south these whales are frequently a hundred or even a hundred and fifteen feet long. They are marvelous creatures. They seem built for speed. It is truly an amazing sight to see them gliding and turning with such effortless ease and grace in spite of their vast size.

In the old days of sailing ships the rorquals were hunted rarely because of their superior speed and also because the shortness of their whalebone and the comparatively limited amount of oil obtained from their blubber made the fishing of them unprofitable. But with the modern methods of whaling, in which fast ships and explosive harpoons fired from guns are employed, the hunting of these finners has become a very profitable undertaking, and has been carried on in such a reckless and wholesale manner during the last eight or ten years that both the industry and the whales are threatened with complete extinction in the near future.

The Playful Dolphins

The dolphins are much smaller than their cousins the great whales, and are easily distinguished not only by their smaller size, but by the shape of their heads and by their long snouts or beaks armed with numerous pointed teeth. They are sociable creatures, nearly always traveling in shoals, or "schools," where they display wonderful grace and agility in their movements. They do not appear to be especially shy or timid, for a school will often accompany a steamer and play a sort of follow-my-leader game round and round her as she ploughs her way through the sea. Their food consists chiefly of fish and small squids. One especially interesting thing about the dolphins is that they do not all of them live in the sea, as the whales do. Four species are found inhabiting the rivers and estuaries of India, the upper Amazon and Rio de la Plata in South America, and the Yangtze-kiang in China.

The Happy Life of a Porpoise

Porpoises are very much like dolphins, but they are smaller and have shorter snouts. Round about the coasts of the North Atlantic and North Pacific Oceans large schools

of these lively sea creatures are often seen sporting and playing and chasing the shoals of herrings and other fishes that flee inshore to escape the teeth of their foes. Porpoises seem thoroughly to enjoy life. They frisk and frolic in the water like boys just out of school. They dash here and there; roll and tumble, showing now their blue-black backs, now their silvery-white undersides; and leap clear out of the water, sending showers of spray high into the air.

They are very troublesome to the fishermen, for the rascals destroy immense quantities of valuable fish. But they make up for this by giving us their skin to be made into strong, serviceable leather—though the "porpoise hide" so much used for boots and shoes is usually the skin of the white whale.

Is This a Sea Unicorn?

One of the most remarkable members of the dolphin family is the narwhal (när'whál), which on account of the long twisted horn or spear that projects from its upper jaw was in old days called the sea unicorn. Only the full-grown male narwhal possesses this singular horn. While it is still a youngster it has merely two small hollow tusks in its upper jaw; but as the animal grows, one of these tusks, almost always the left one, begins to grow out in an astonishing manner. And it goes on growing until it is eight or nine feet long—more than half the length of the animal itself.

Of what use this extraordinary horn is to the creature does not seem clear, but it certainly makes a fine weapon. And when the males fight, as they always do when they are choosing partners, they prod each other savagely with their natural spears.

Like their cousins the dolphins, narwhals are extremely playful; and in the icy seas of the Arctic fifteen or twenty of the queer, long-horned creatures may frequently be seen sporting and gamboling together like porpoises. They are still quite common off the coast of Greenland; but they have been so ruthlessly hunted for the sake of the oil from their blubber and for their ivory tusks that they are much rarer than they used to be.

MAMMALS

Reading Unit No. 18

A FEW OF THE QUEEREST BEASTS

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

How an anteater dines on ants, 4-451

How the sleepy sloth lives among the tree tops, 4-452-53

How the armor-plated armadillo spends its life, 4-454-55

What prehistoric armadillos and sloths looked like, 4-456

The habits of "scaly anteaters," or pangolins, 4-456

The piglike aard-vark, 4-457

Things to Think About

How is an anteater fitted for getting and eating ants?

Why do sloths have enormous hooked claws?

How do armadillos escape being

eaten by beasts of prey?

How large were prehistoric armadillos?

How do we know that the aard-vark is not a pig?

Picture Hunt

What animal is popular in certain parts of South America? 4-450

How do sloths go from one tree to another? 4-452

Explain why the armadillo is safe

from its enemies, 4-453-55

Why does the armored anteater fear no enemy? 4-454

In what ways do aard-varks differ from pigs? 4-454

Related Material

How different are modern sloths and armadillos from their prehistoric ancestors? 3-49

What kind of nest must aard-varks break into in order to

get termites? 3-378-79

How does the lesser anteater pick up insects? 3-326

What does an ant hill look like? 3-320-21

Summary Statement

There are many insect-eating mammals. The giant and lesser anteaters have long, slender, tapering heads from which they can shoot out wriggling, sticky tongues. These are used to mop up an ant hill which has been broken up by the sharp claws of the anteaters. The armadillos have armor plates which protect

them from enemies. The armadillo's ancestors were much larger than the armadillo is. Though sloths are vegetarians, they belong to this group. The sloth hangs from large, hooked claws. The aard-vark is a clawed, piglike animal that destroys termites' nests to get at the insects.

QUEER BEASTS WITH STRANGE HABITS

Nature's idea of an insecticide is not quite ours, but the giant anteater does his work very well indeed. With his long sticky tongue he can eat up more ants than you could count, in less time than you would take to tell about it. In certain parts of South America, where ants are a positive menace, the anteater is a welcome inhabitant, and the natives wish only that there were more of him!



Photo by N. Y. Zoological Society

A FEW of the QUEEREST BEASTS

When You Have Read about the Anteaters, Sloths, Armadillos, and Aard-Varks, You Will Agree That They Are Strange Creatures Indeed

THERE are so many queer creatures in the world that it is hard to say which among them all is the most extraordinary. But if you were to search the world over, from the North Pole to the South Pole, you probably would never meet a queerer-looking beast than the "great anteater" that lives hidden away in the hot steaming forests of tropical South America, where few people are likely to meet him.

The anteater belongs to a strange order of creatures called "toothless animals." He is sometimes called the "ant bear," perhaps because he is a big shaggy animal about the size of a small black bear. But there the likeness ends. Instead of being broad and stout like a bear, the great anteater is so flat and lean that he looks as if he had been squeezed sideways between two boards. His head is merely a long, narrow, tapering snout, with two beady eyes at the top of it and a small round button of a mouth at the end. Out of this little mouth a long, thin,

sticky tongue shoots in and out like a red wriggling worm!

On his shoulders this queer creature has a broad black stripe bordered with bands of white hair. A ridge of short, stiff, grizzle-gray hair stands up like a crest on his back, while his sides are clothed with thick mottled fringes so long as almost to sweep the ground. His tail is like an enormous plume. This the anteater wraps himself up in when he goes to bed, or uses as a water-proof coat to keep off the rain during the heavy tropical showers.

An anteater has no teeth, but his feet are armed with strong stout claws, with which he lashes out viciously at anyone who interferes with him. When walking, however, the poor beast finds his claws very much in the way. Those on his front paws are so enormously long and curved that he is obliged to double them back under his foot pads and hobble along in a most uncomfortable fashion.

QUEER BEASTS WITH STRANGE HABITS



Photo by American Museum of Natural History

Here is a small cousin of the giant anteater; it is the banded anteater, which lives in Australia. You will notice that his tail is long and slender compared with the bushy tail of his big relative.

As you have probably guessed from his name, the anteater lives almost entirely on ants. Indeed, with his extraordinarily small mouth it would be impossible for him to eat anything much larger. But since there are plenty of ant hills in the tropical forests, the anteater is fairly sure of a good meal when he sets out to seek his supper.

How the Anteater Eats Ants

With his nose to the ground, as if he were smelling his way, the ungainly fellow hobbles along until he comes to a big ant hill. Then without more ado he sets to work to tear a hole in the side of the hill with his great curved talons. The little ants at once rush to the breach in the wall to see who is breaking down their house. They come pouring through the hole in thousands, and the wily anteater just sits back on his haunches and mops them up as fast as he can go. Flick! flick! goes his long tongue, in and out of his queer little mouth hole, twice every second, and each time it is drawn back it is covered with struggling ants that stick to it like flies to sticky fly paper.

So long as the ants keep swarming out of the nest, just so long does the anteater go sweeping them into his mouth with his remarkable tongue. He swallows the insects whole, for he has no teeth to crunch them with; but down below, this strange animal has a kind of gizzard—somewhat like the gizzard of a fowl—and there his food is ground.

When most of the population of the ant hill have disappeared down his throat, the

anteater hobbles off to bed. He has no permanent home. He just curls himself up in a patch of long grass, with his snout tucked into the fur on his chest and the claws on his forefeet and his hind feet locked together. Then he covers himself up with his huge fluffy tail and falls sound asleep until the evening.

How Anteaters Defend Themselves

If no one molests him, the anteater is harmless enough. But if he is attacked he will sit back on his haunches and strike out so savagely with his fearsome claws that even a jaguar often wishes he had left the queer shaggy fellow alone. And not only does he use his claws. He will try, if he can, to seize his enemy tightly in his arms and squeeze him to death as a bear does.

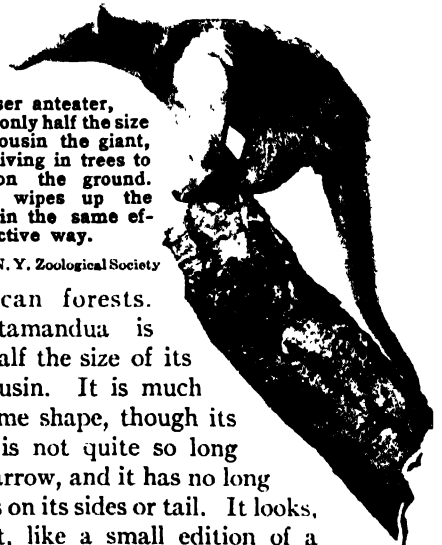
One seldom sees even two of these strange beasts together. They are most unsociable. Each anteater prefers to live alone and potter about in his own peculiar way without being bothered with company. A mother anteater, however, is very affectionate to her cub. She carries the little thing about on her back, and often keeps it with her for a whole year—or until another baby arrives to usurp its place.

Besides the "great anteater" there is a smaller anteater called the tamandua (tä'-män-dwä'), and a tiny creature called the "pigmy anteater," both living in the South

The lesser anteater, which is only half the size of his cousin the giant, prefers living in trees to living on the ground. But he wipes up the insects in the same effective way.

Photo by N. Y. Zoological Society

American forests. The tamandua is only half the size of its big cousin. It is much the same shape, though its snout is not quite so long and narrow, and it has no long fringes on its sides or tail. It looks, in fact, like a small edition of a



QUEER BEASTS WITH STRANGE HABITS

The sloth is as strange in his habits as the looking-glass animals who caused Alice so much perplexity. He spends most of his life hanging upside down from a tree, and eats, walks, and

sleeps in that position. Mostly he just sleeps, but when the wind blows he becomes a little more active, for then he can move from tree to tree as the wind blows the branches together.

Photo by N. Y. Zoological Society

great anteater that has had its hair shingled.

This strange fellow lives up in the trees, hooking himself to the branches with his claws and his tail—which is almost as useful as a spider monkey's tail. He sleeps most of the day and spends his waking hours climbing nimbly from bough to bough hunting for the ants which make their nests up in the tree tops. He is also a great enemy to colonies of stingless bees that make their nests among the loftiest branches of tall forest trees, for he rips open the nests with his claws and licks out the honey with his long, wormlike tongue.

The pigmy anteater is a funny little animal no bigger than a rat and clothed with short, silky, reddish fur. Like the tamandua, it spends its life in the trees. There it will sleep for hours hanging upside down from a branch, to which it anchors itself by its claws and its tail.

The Two-toed Anteater

This little fellow has several names. It is called the "two-toed anteater," because, although it has four toes on its front paws, only two of them are provided with the long curved claws which distinguish the anteater family. And then the natives in some parts of South America call this funny little creature the "kissing hand," for when it has nothing better to do it amuses itself by licking its paws like a little bear. The natives firmly believe, too, that the pigmy anteater never eats anything at all. But of course this is not true; the little animal eats ants like all anteaters. It also rips open the nests of wasps and wild bees when-

ever it discovers them, hooks the grubs out of the combs, and greedily devours them.

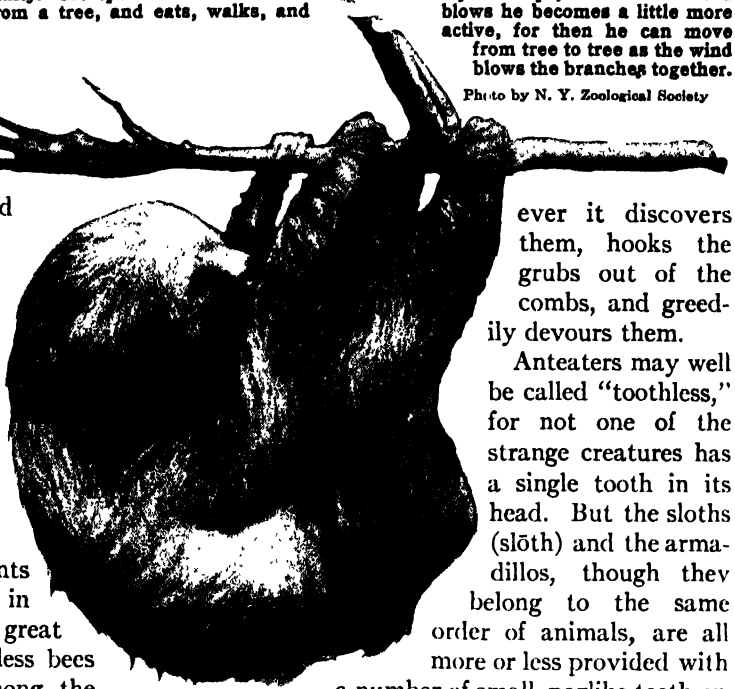
Anteaters may well be called "toothless," for not one of the strange creatures has a single tooth in its head. But the sloths (slōth) and the armadillos, though they belong to the same order of animals, are all more or less provided with

a number of small, peglike teeth on each side of the jaw. It is true, however, that they have no front teeth. Most of these so-called "toothless" beasts are natives of South or Central America, though one or two wander as far north as Texas.

A dull, clumsy-looking creature is the sleepy sloth. It is a fairly large animal—about the size of a big cat—with a short round head, snub nose, large, round, dull-looking eyes, and small ears which are hidden under its long, untidy fur. The sloth has no tail worth mentioning; its two front legs are very much longer than the hind pair; and its feet are armed with enormous hooked claws.

From head to foot this queer animal is clothed with long, shaggy hair of a grayish color with greenish patches like the powdery green growths incrusting old trees and fences. And these patches really are clusters of the same kind of powdery green microscopic plants, which, strange to say, grow and flourish on the sloth's fur coat in the warm, moist air of the tropical forests.

Bunched up into a ball, with its head tucked between its legs, the sloth spends most of the daylight hours sound asleep. It



QUEER BEASTS WITH STRANGE HABITS

hangs by its hooks from the bough of a tree, and looks itself so much like a broken branch, or like a great knot in the bough, that only the very sharpest eyes are able to detect it. At night the sleepy thing wakes up and creeps slowly about the trees, hitching itself along the under side of the branches by its hooked claws. Now and again it stops to munch the fruit or foliage, but as soon as its appetite is satisfied it hunches itself together, closes its eyes, and falls fast asleep again!

The sleepy sloth is as much at home in the tree tops as a monkey. It is born up a tree, and it lives and dies up a tree. Never, unless it is obliged to, does it set foot upon the ground. It finds all the food it wants in its green, leafy home, and all the moisture it needs in the juicy shoots and fruits growing there. So it is not obliged to descend the trees to look for water to drink.

When down on the ground the poor old sloth is anything but at ease. It is extremely short-sighted and hard of hearing, while its oddly shaped legs and its enormous hooked claws make walking on all fours a most uncomfortable performance. But it can scuttle along pretty quickly, in an awkward way, when it is driven by fear to bestir itself.

So the queer sloth spends all its days upside down in the trees, no matter whether it is sleeping, feeding, or crawling. It is a silent beast, though it bleats at times like a sheep; and if you attempt to remove it from its perch it gives vent to a loud snort of protest. It has little to fear from the beasts of prey which prowl around in the thick jungles below. It has only two

enemies. The big snakes that wriggle and slither noiselessly through the branches will seize the drowsy sloth when it is peacefully slumbering, and the savage jaguar, who can climb the trees as nimbly as the smallest cat, will steal up on it whenever he scents

it out. These are its merciless enemies.

There are two of these queer animals, both living in tropical American forests. One called the "three-toed sloth," or the ai (ä'ë), has three toes and three claws on all its four feet. The other one, called the "two-toed sloth," has three toes on its hind feet but only two on its forepaws.

It would be hard to find two creatures less alike than a sleepy sloth and a wide-awake armadillo (är'mä-dil'ō)—though they both belong to the same strange

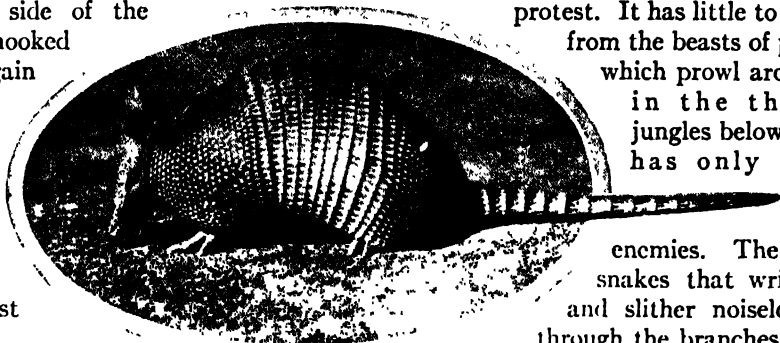


Photo by American Museum of Natural History

Here is the Mexican armadillo wearing his comfortable suit of jointed armor. No one would guess from looking at the strange fellow that he can run amazingly fast for such a short-legged creature.

The nine-banded armadillo you see below sometimes travels as far north as Texas. He and his cousins are charming additions to any zoo, for armadillos are cheerful little fellows, and will play with a ball on a string as cunningly as a cat.

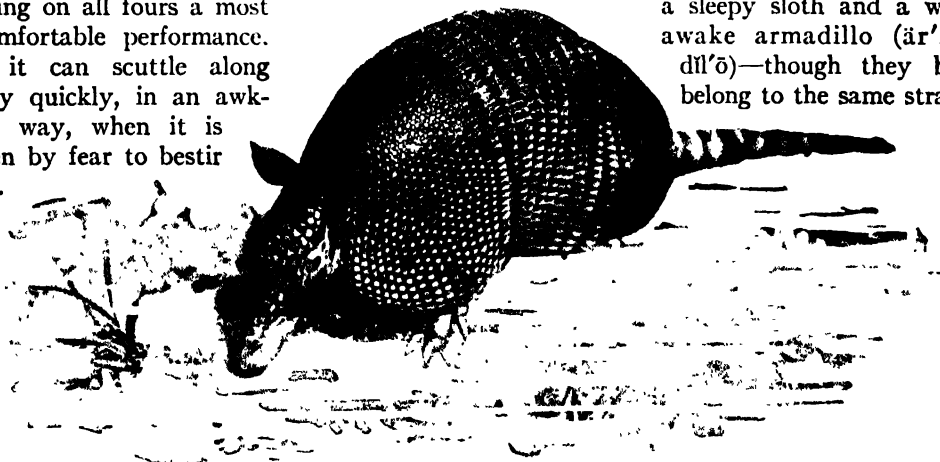
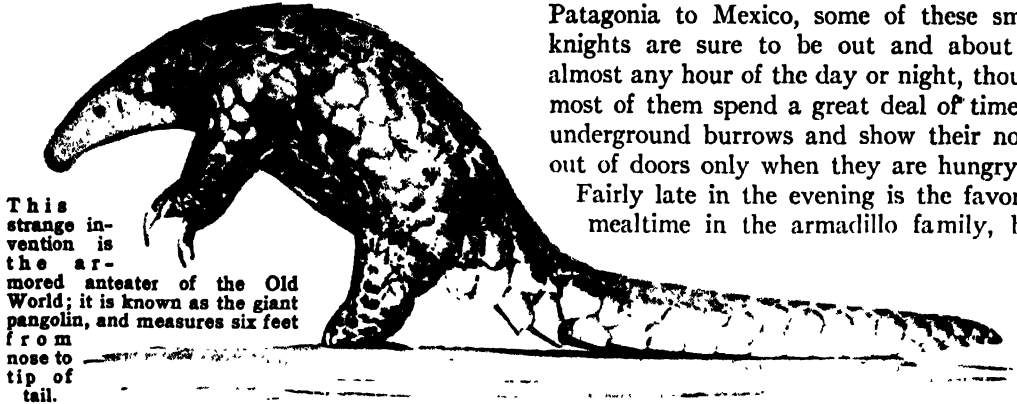


Photo by N. Y. Zoological Society

QUEER BEASTS WITH STRANGE HABITS



This strange invention is the armored anteater of the Old World; it is known as the giant pangolin, and measures six feet from nose to tip of tail.

Patagonia to Mexico, some of these small knights are sure to be out and about at almost any hour of the day or night, though most of them spend a great deal of time in underground burrows and show their noses out of doors only when they are hungry.

Fairly late in the evening is the favorite mealtime in the armadillo family, but

Photo by British Museum

company of toothless animals. Like the anteaters, an American armadillo has a long, wriggly tongue, and like both the anteaters and sloths it has very long curved claws on its feet. Otherwise one might never suspect that it had any connection with either animal.

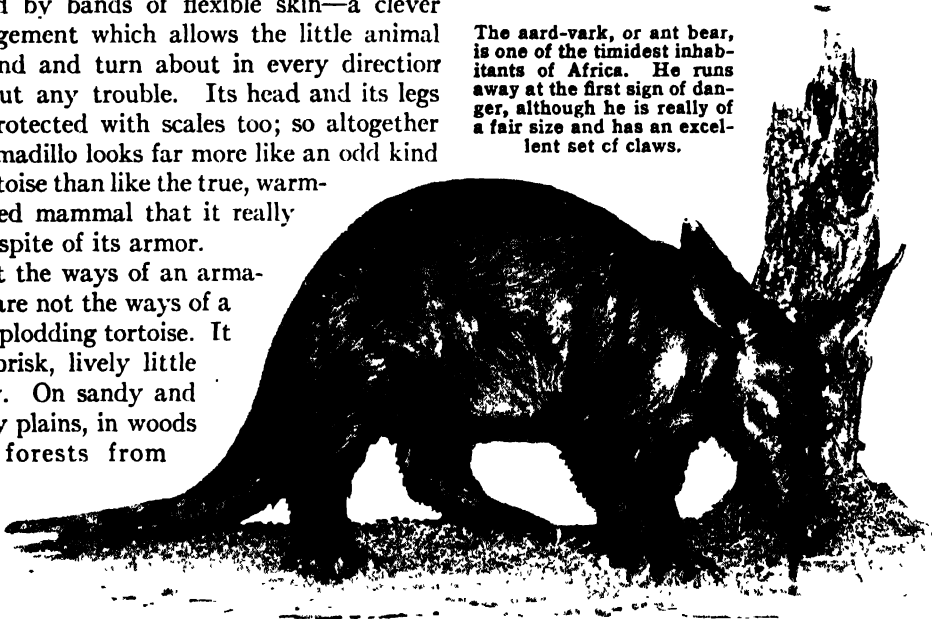
Instead of being clothed with a thick fur coat, an armadillo is clad, like the valiant knights of olden days, in a complete suit of armor. A strong bony shield covers the animal's shoulders, while another one protects its hind quarters. Between these two shields are several rows of bony scales connected by bands of flexible skin—a clever arrangement which allows the little animal to bend and turn about in every direction without any trouble. Its head and its legs are protected with scales too; so altogether an armadillo looks far more like an odd kind of tortoise than like the true, warm-blooded mammal that it really is, in spite of its armor.

But the ways of an armadillo are not the ways of a slow, plodding tortoise. It is a brisk, lively little fellow. On sandy and grassy plains, in woods and forests from

some of the odd little animals may often be met busily hunting for insects in the full light of day. Some armadillos care for nothing but insects, which they crunch up between their strange, peglike teeth with great enjoyment. Others eat worms, slugs, and grubs of all kinds, while the larger armadillos catch mice and young ground birds, and even devour small snakes after crushing the reptiles with the sharp edge of their hard, bony armor.

It is amazing how fast these funny little animals can run on their long, doubled-up claws. If surprised when feeding they rush

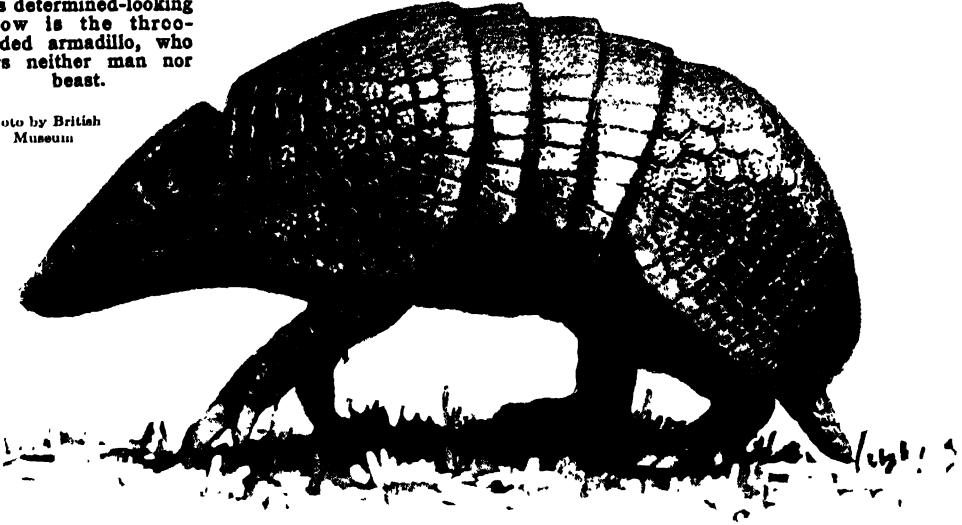
The aard-vark, or ant bear, is one of the timidest inhabitants of Africa. He runs away at the first sign of danger, although he is really of a fair size and has an excellent set of claws.



QUEER BEASTS WITH STRANGE HABITS

This determined-looking fellow is the three-banded armadillo, who fears neither man nor beast.

Photo by British Museum



off at a tremendous pace, and if the soil is soft and sandy they are almost sure to be safely underground before their enemies can catch them. One small armadillo—called the “three-banded armadillo,” because it has three movable bands of scales between its front and back shields—has an even more surprising trick to play if it has no time to bury itself. If a hungry beast of prey pounces suddenly on this clever little animal, it tucks in its head or its tail, rolls itself up like a hedgehog, and in a moment has turned itself into a hard, slippery ball, which even a puma or a jaguar cannot manage to bite!

Giants and Fairies

The giant armadillo of Brazil, the largest of these strange animals, is often more than a yard long from the tip of its nose to the tip of its long, thin, scaly tail, while the fairy armadillo, the smallest of all, is hardly five inches long.

This little “fairy” is the beauty of the armadillo family. Its armored suit is a pretty pink, and is worn over an undercoat of silky white fur which falls in a snowy fringe all around from under the edge of the shell. It is a rare little creature, only to be found in the west of Argentina, where it burrows in sand which is sometimes so hot as almost to scorch one's hand. But the fairy armadillo thoroughly enjoys this baking heat and shivers with cold even under a

noonday sun if taken out of its hothouse.

There are a great many different kinds of these armor-clad animals, and most of them are quite intelligent and make very amusing pets. The yellow-footed armadillo of Brazil is not at all difficult to tame. It is a bold, restless little chap with an inquisitive way, and if disturbed when at home in its burrow it pops its head out of its door to see what the trouble is and grunts like a little pig.

Another bright little animal is the hairy armadillo, whose armor is almost hidden under the long silky black hair which grows out from between all the joints. It runs about very fast, snuffing the air to see if there happens to be a dead animal lying anywhere near. If it discovers a dead horse or a sheep on the ground, the armadillo burrows underneath it; and there, if no one disturbs it, it will live happily and contentedly until it has picked every morsel of meat from the bones.

Our Only Armadillo

The nine-banded armadillo, a lively little animal with nine rows of armored plates on its back, is the only one of these curious creatures that makes its home in the United States. Its headquarters are in Mexico, but it sometimes strays over the border into Texas, where it settles down and industriously digs out its burrow in dry sandy soil.

QUEER BEASTS WITH STRANGE HABITS

But it was not always so. In ages long gone by, when such fearful beasts as the saber-toothed tiger and the hairy elephant roamed the earth, gigantic armadillos as big as rhinoceroses trundled about the land like animated armored cars—filling all small, defenseless creatures with terror and dismay. Giant ground sloths, too, as big as elephants, lived in South America in those far-off days. Terrible things they must have been. And it is well for us that such monsters have long been extinct, and that the little nine-banded armadillo is now the only representative of that toothless race which we are likely to meet in our own land.

In the Old World the "toothless" animals are represented by the pangolins (pän-gō'-līn), and a queer beast called the aard-vark (ärd'-värk). A pangolin looks like nothing so much as a large fir cone. Each scale has a sharp cutting edge, and is set separately into the skin in such a way that the animal can twist and turn about, or roll itself up into a ball if it wants to. So protected, the pangolin has little to fear from the hungry wild beasts that prowl about seeking whom they may devour. Should a rash hunter attempt to seize a pangolin by the nose—which is the only possible way to seize the creature—it promptly tucks its nose between its legs, claps its broad, scaly tail over its head, and in a twinkling has transformed itself into such a painfully spiky ball that the enemy after one sniff at it goes off in disgust.

Pangolins are sometimes called "scaly anteaters," for like the South American anteater, they live chiefly on ants and other insects of the kind. They have long curved claws for burrowing in the ground and tear-

ing open the nests of ants and termites; and with their long sticky tongues they lick up the angry little insects that come tumbling out. Like the anteater, too, they have no teeth at all, and only a funny little round, tubelike mouth.

We find these toothless creatures in Africa and Southern Asia, for they thrive only in really warm countries. They live, for the most part, in underground burrows or in deep crevices among the rocks, and seldom venture abroad until after dark, when they come out to look for ant hills.

The giant pangolin of West Africa is almost six feet long, if you include its short tail, and must make a noble spiky ball when it is rolled up. But most of this strange toothless family are less than half that size. Most curious of all is the long-tailed pangolin, also a native of Africa, which has a remarkable tail nearly twice as long as its body. Although it spends a good deal of time underground, it is fond of climbing trees for a change. With its body bent stiffly backward it supports

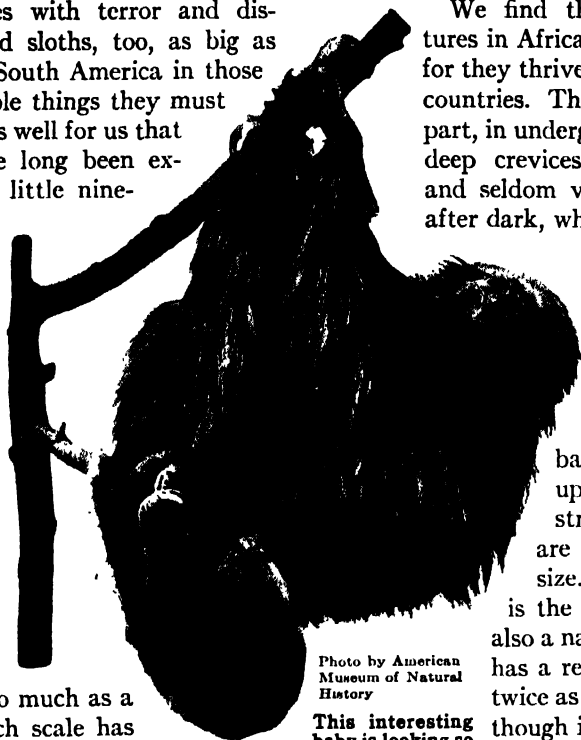
Photo by American Museum of Natural History

This interesting baby is looking so hard at his mother that one almost wonders whether she is giving him lessons in walking, in order that he may amble along in the manner proper to all two-toed sloths.

itself while up aloft by sticking its hind claws into the bark of the trees and pressing its long, scaly tail flat against the trunk. And in this strange attitude the pangolin remains for hours without moving!

With such great claws as it has it is easy enough for a pangolin to climb up and down a tree trunk, but it has a much quicker way of descending if it happens to be in a hurry. Rolling itself up into a tight ball the queer animal allows itself to fall plump to the ground. This adventure does not hurt the animal at all, since its thick, elastic scales break its fall and preserve their owner from injury!

Last of these queer toothless folk comes the aard-vark—a strange beast with a



QUEER BEASTS WITH STRANGE HABITS


strange name, for "aard-vark" is a Dutch word that means "earth pig." But the aard-vark is the funniest pig that ever was seen. It is about the size of a pig, and it has a pig-like snout, but there the resemblance ends. Instead of neat hoofs the aard-vark has long claws on its feet, like all the toothless animals; and it has the long, wormlike tongue that its relatives have. On the top of its head are a pair of enormous donkey's ears, and hanging down behind is a thick scaly tail, like the tail of a kangaroo—although it is not quite so long. To complete the picture, the aard-vark has a short thick neck and a humped-up body thinly clothed with scattered bristly hairs.

A sad, solitary beast is the aard-vark. Exceedingly nervous and shy, it hides in a hole in the ground as if it were ashamed to be seen, and seldom ventures out until the early dawn, when most of the night prowlers have gone home to bed and the sun-loving folk are not yet up. Then timidly and cautiously the "earth pig" pokes its long

snout out of its den and takes a look round to see if the coast is clear. If there is nothing alarming to be seen it comes right out and shambles off to the nearest ant hill.

Aard-varks live on the South African plains in the midst of big hills thrown up by those wonderful little insects called "white ants" or "termites." These hills the animals tear open with their claws in the usual way, and then greedily lick up the swarms of busy workers that come hurrying out to see what is the matter.

If disturbed while enjoying his breakfast, the aard-vark at once leaves his meal and bolts for home in a desperate hurry. But if he has wandered too far from his burrow and so cannot get back quickly enough, he starts in frantic haste to dig out a new one wherever he happens to be. He tears up the ground with his claws, flinging the clods of earth between his hind legs in showers; and so fast does the queer fellow work that in a few minutes' time he has completely buried himself!



The tenrec of Madagascar has the habit of burrowing beneath the rice crops in search of insects and grubs—much to the annoyance of planters.

Photo by British Museum

MAMMALS

Reading Unit No. 19

THE STRANGE BEASTS OF AUSTRALIA

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

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What is a kangaroo's pouch for?
What animal is a living "teddy bear"?
How do Virginia opossums act

when captured?
How do mother opossums care for their babies?
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Summary Statement

Because Australia was cut off from the mainland, its animals are not like those of other continents. Some have pouches in which their babies are kept. Two of the Australian mammals are

birdlike, for they lay eggs. Kangaroos hop on their hind legs. Opossums carry their babies on their backs. Our opossum is the only pouched animal outside Australia.

THE STRANGE BEASTS OF AUSTRALIA

It is not hard to imagine the astonishment of the first European sailors and travelers who saw these strange beasts leaping over the plains of Australia; for there is nothing like the kangaroo anywhere else in the world.



Photo by N. Y. Zoological Society

The STRANGE BEASTS *of* AUSTRALIA

Roaming through That Land, You May Meet the Kangaroo, Wallaroo, Bandicoot, Tasmanian Devil, Koala, Cuscus, Duckbill, and Many Another Queer Creature

A USTRALIA is a remarkable land in many ways, but most of all for its animals. It is a kind of wonderland to the zoölogist, a place where mothers carry their babies around in bags and mammals lay eggs like the birds. The animals found in Australia are different from the animals of all the other lands. There are no monkeys, no cats, great or small, no bears, and no wild cattle or hoofed animals of any kind.

Fierce "dingo" dogs hunt in packs over great wild tracks of country; bats of many kinds flit about in the twilight; a few kinds of small gnawing animals delve and burrow in the soil; and seals and sea lions inhabit the coasts. But apart from these familiar wild folk, all the other animals throughout the length and breadth of Australia belong to a strange order of mammals known as "pouched animals," or "marsupials" (mär-sū'pī-äl). And with one exception, all the pouched animals in the world live in Australia and the islands round about the continent.

Very old indeed are these curious creatures—survivors of an ancient race that once flourished all over the world. Gradually, as ages passed, they died out almost everywhere, giving place to more highly developed animals who were better able to hold their own in the fierce battle of life. Only in Australia were the pouched animals left in peace. For long, long ago Australia was cut off from the mainland by the sea; so the newer kinds of fierce, strong beasts could not cross the wide ring of water to molest those original inhabitants, and the pouched animals could not stray into other lands.

There they were and there they are to-day. As age succeeded age these primitive creatures lived and flourished on the huge island continent, and during the passing years they did not change so much as did other animals across the sea. So to-day many of the pouched animals are very much the same as their ancestors were in prehistoric times.

THE STRANGE BEASTS OF AUSTRALIA

There are a great many of these remarkable creatures. In their size, their appearance, and their habits they differ very much from one another; yet there are certain ways in which they are all alike. And nearly all of them have a furry pouch, or pocket, to carry their babies about in until the wee things are old enough to run. This, of course, is why they are called "pouched animals."

The Jumping Kangaroo

The most famous of all these Australian animals are the jumping kangaroos. They are about the funniest-looking of all four-legged folk. You may often have laughed to see them hopping and bounding about in their inclosure in a zoölogical park. A kangaroo is almost the shape of a pear, with a rabbit-like head at the smaller end and a long thick heavy tail at the other. Its legs, too, are decidedly odd. The hind pair are enormous, while the front pair are less than half as

large and look more like little arms than legs.

Naturally, with such strange legs as these a kangaroo cannot walk about comfortably on all fours in the

usual way. But this does not inconvenience the queer creature, for it can get along quite as well, or even better, on its two legs than most animals can on four.

Holding its little front paws against its chest, as a man holds his arms when running a race, the kangaroo bounds on its strong hind legs at a most astonishing rate, its long heavy tail thump, thumping the ground as it goes. It springs with the greatest ease over all the bushes, fences, and fallen tree trunks that lie in its way, taking tremendous flying leaps of from twelve to fifteen feet or more when it happens to be in a hurry. It is naturally a somewhat timid animal, ready to take flight at the first alarm, but if overtaken and brought to bay it will kick out viciously with its powerful legs. And since it is armed with a formidable weapon in the shape of a solid claw ten or twelve inches in length, it can inflict terrible wounds on its enemies. So a big kangaroo is not to be trifled with!


The "Old Men" and "Flying Does"

The great gray kangaroo is the giant of his tribe. A "boomer," or "old man," as a full-grown male is called, is taller than a man when it stands erect, and about four feet high when it rests on its hind legs and its tail—which together make a sort of

three-legged stool for the animal to sit on. The gray ladies of the family are much smaller than the boomers, and in Australia are called "flying does."

Gray kangaroos go about together in large herds, or "mobs," led by a wise old boomer whom the rest always follow when they go bounding over the grassy plains from one feeding ground to another.

When cropping the grass they move slowly about



The kangaroo is a most unnatural mother when she is pursued. Instead of trying to defend her baby, she tosses the heavy little thing from her pocket so that she can run away faster. Of course, she probably remembers well where she threw it away, and no doubt hopes to go back and pick it up.

Photo by F. W. Bond

THE STRANGE BEASTS OF AUSTRALIA

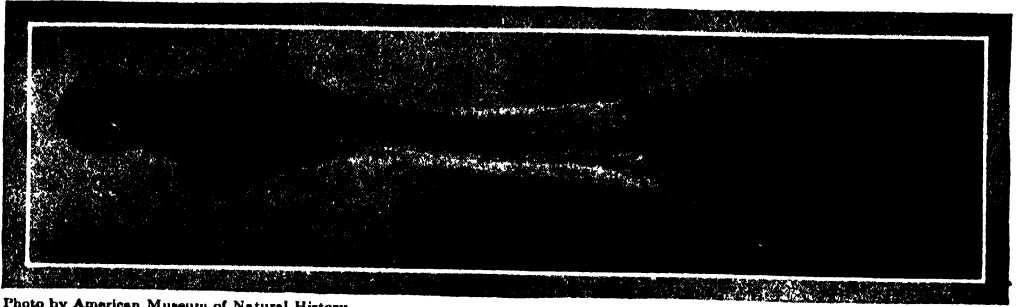


Photo by American Museum of Natural History

Here is the long hind foot of a kangaroo; and a very useful foot it is, for with it the owner can take great

leaps over the countryside, can fight off his enemies, and last but not least, can scratch himself thoroughly.

on all fours, swinging their long hind legs forward between their arms, which they use like a pair of crutches. When they are feeding on the bushes round about they sit up on their "three-legged stools" to nibble the tender shoots and young leaves at their ease.

In the hottest hours of the day the old kangaroos rest quietly in the shade, while the "joeys," as the young ones are called, gambol about and have all sorts of jolly games together. Kangaroos are fond of play, and even the grown-ups will join in the fun in the cool of the evening. Two big boomers will suddenly jump up, stand on their hind legs, and start cuffing each other for all they are worth. They have genuine boxing matches; for although they appear to be fighting desperately, it is nothing but sport, and they do not really hurt each other.

Most of the year the whole mob, boomers, flying does, and joeys, are all very friendly and happy together; but about Christmas time most of the bigger joeys leave their parents and form separate mobs of their own, while many of the old boomers go off

alone into the thick scrub to enjoy a short holiday, free from family cares. They rejoin the mob early in the spring.

Although kangaroos are such big animals, a new-born baby kangaroo is one of the tiniest babies you ever saw, hardly as long as your thumb. It is so small and weak and helpless that it is hard to say what would become of it if its mother had not a pocket to keep it in. But in mother's furry pocket this queer little object is quite safe and warm, and there it stays quietly, just feeding and growing. No one ever sees it until several weeks have gone by.

By this time the tiny creature begins to look more like a little kangaroo; and as soon as it is properly dressed in a woolly fur coat, joey begins to "sit up and take notice." Then one fine day, growing bolder, it pushes its

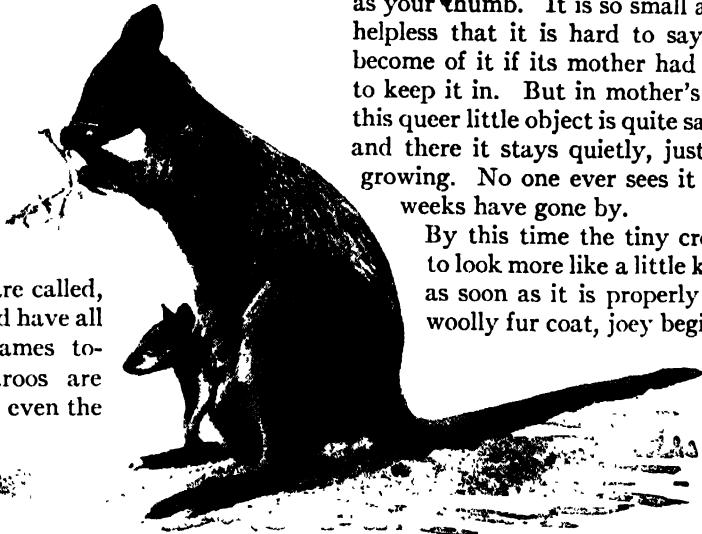


Photo by N. Y. Zoological Society

The brush-tailed wallaby, which you see above carrying her "joey," as baby kangaroos are called, is one of the rock wallaby tribe, which lives in the mountains.

wee head out of mother's pocket and takes its first look at the big world. It does not come out altogether. For some weeks longer it stays in its strange nursery. But as its mother moves about cropping the grass, little joey stretches out its little head and plucks a few blades too.

The youngster now grows apace, and soon growing bolder, it hops right out of its mother's pouch and begins to roll and tumble about by her side. For some time yet the little creature does not venture far afield; it keeps close to its mother, ready to scramble

THE STRANGE BEASTS OF AUSTRALIA

back into her pocket the moment it is tired or frightened. And the kind doe patiently carries joey about long after the lazy little thing can quite well hop along on its own legs.

There are several different kangaroos, all very much alike in their ways. They like open plains or rough tracts of country covered with low scrub or long grass, where there is plenty of space to spring and bound. The red kangaroo, which is almost as big as the gray one, likes rather rough, rocky ground, and the wallaroos prefer the hills and the mountain side.

Wallaroos (wōl'ā-rōō') are not so sociable as their red and gray cousins. They live alone or in pairs and are rather quarrelsome. Since they are big and strong and fight with their teeth as well as with feet and claws, they are somewhat dangerous animals.



Photo by Australian Government

As you can see from the picture above, the wallaby looks very much like the kangaroo, the chief difference being that the wallaby is only about half the size of the kangaroo. It usually lives in bushy country, and is more brilliantly colored than its larger relative.

Wallabies (wōl'ā-bī) are small kangaroos with lighter-colored coats and more hairy tails than their big cousins. They live in the scrub or brushwood where there is plenty of cover for them to hide in, and seldom come out into the open except to feed early in the morning and late in the afternoon. They are timid, cautious little folk, and well they may be, for the fierce dingoes are always hunting them, and the great wedge-tailed eagles are on the watch to swoop down on any that show themselves too boldly. The largest wallaby is about half the size of the big gray kangaroo, and the smallest is a tiny thing no bigger than a rabbit.

Then there are the tree kangaroos who live in the forests and spend a good deal of time up in the branches of the trees. Their hind legs are shorter and their front legs are longer than those of other kangaroos, so they are more like ordinary four-footed folk, and walk a run instead of hopping a bounding over the ground.

Tree kangaroos always sleep and feed the trees, where they are almost as much home as monkeys are. They climb the tree tops, clinging easily to quite the branches with their sharp claws and rough foot pads—and sometimes with their long furry tails as well. When they want to come down to the ground these strange kangaroos always descend tail first; or they jump from a great height and scamper away on all four galloping along much as squirrels do.

Besides all the kangaroos, both great and small, there is

This amusing animal, which seems to be sitting so comfortably on its hind legs and tail, is the Bernardin kangaroo. One might think that he looked more like a rabbit than a kangaroo, until one looked at his long furry tail.

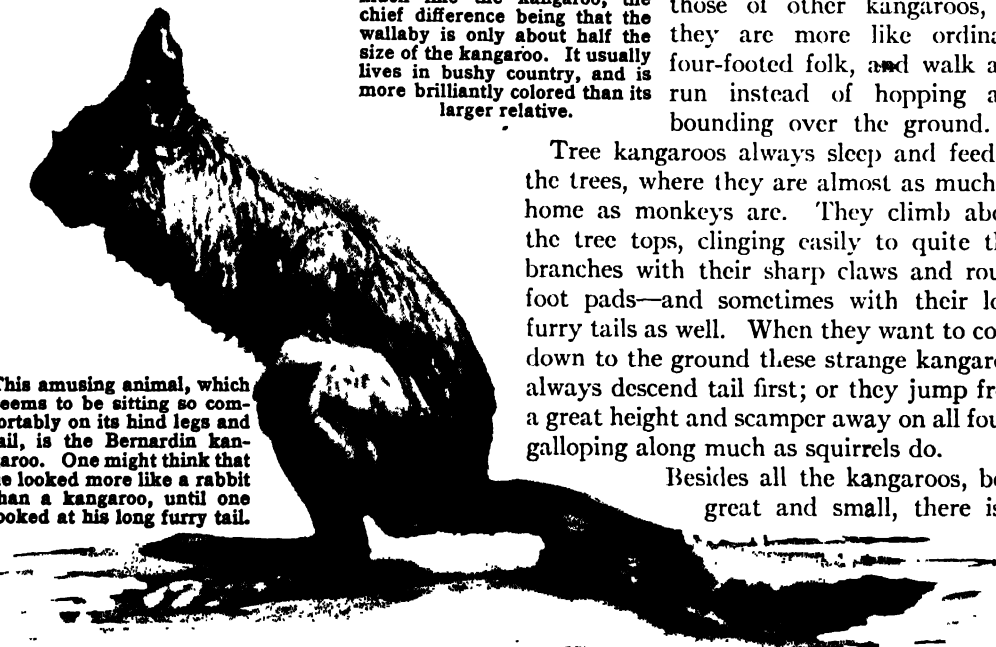


Photo by N. Y. Zoological Society

THE STRANGE BEASTS OF AUSTRALIA

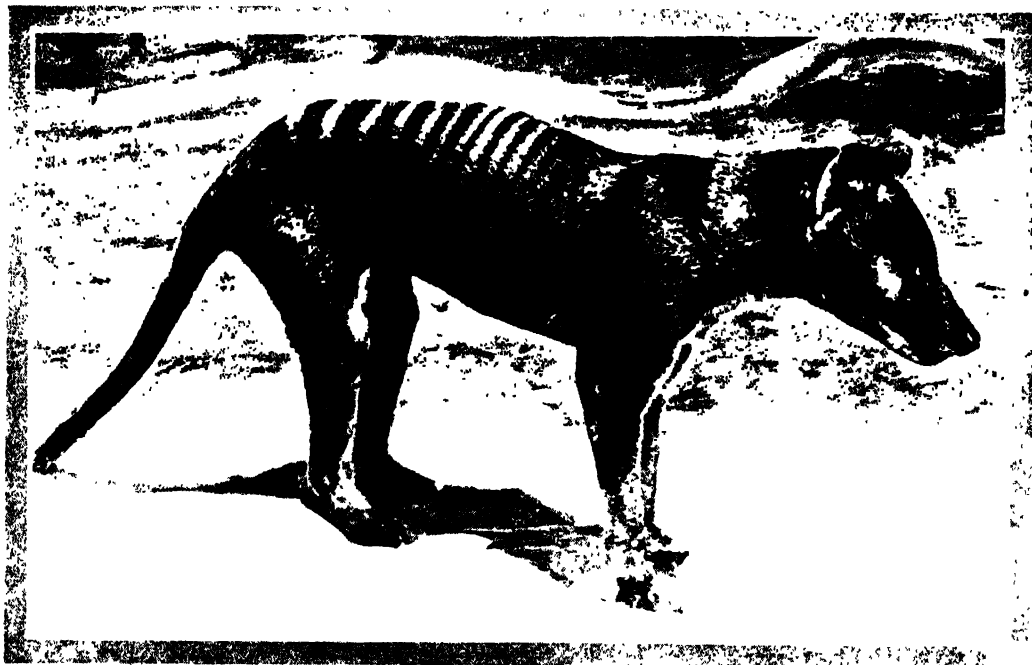


Photo by N. Y. Zoological Society

This unusual animal, looking a good deal like a cross between a tiger and a dog, is the Tasmanian wolf, the largest of the Australian mammals that eat flesh. Our friend the timber wolf would have a hard time recog-

nizing this creature as a brother, for besides having a strange striped coat, a long stiff tail, and a most un-wolflike growl, the Tasmanian wolf never hunts in packs, and his wife carries her babies in her pocket!

whole host of pouched animals of many sorts living in the wilds of Australia. If we wanted to see them all we should have to spend several years there, doing nothing but traveling up and down over the country. But since we can't do that, we must do the next best thing, and content ourselves with making the acquaintance of a few of the most interesting of these strange four-footed folk.

Strange Animals with Pockets

Among them are so-called "native" tiger cats, wolves, and bears. Then there are pouched rats and mice and even pouched moles. But none of these animals is in any way related to the cats, wolves, bears, rats, and moles of other lands. Most of them are quiet, harmless folk, though a few live by hunting and devouring their weaker neighbors, taking the place of the wolves and foxes in other parts of the world.

The dasyures (dās'ī-ūr), or native "tiger cats," are to be found in Tasmania and New Guinea as well as all over the Australian continent. They are **savage**, blood-thirsty

little beasts, quite as fierce and wild as true hunting cats, although some of the smaller ones are no bigger than rats. One seldom sees the little animals, for they live in holes in the ground, in hollow logs, or among stones, and do not venture out of doors until the evening. Then the sly "tiger cats" creep stealthily about, stalking small birds, mice, and even insects, while the larger ones sometimes make themselves a nuisance by robbing hen roosts.

The spotted dasyure is one of the largest and boldest of its tribe; if you catch it at its tricks in the poultry yard, it will turn and snarl, and even spring at you instead of running away. It is very powerful for its size, and will actually kill a wallaby much bigger than itself.

A Make-believe Tiger

This small spotted "tiger" is about the size of an ordinary cat, and is a handsome little beast dressed in a thick smoky-brown fur coat spotted all over with white. It likes to make its home in a hollow gum tree.

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There it sleeps away most of the day, tired out with its nightly hunting.

Most of the native "cats" are spotted, and of course all the mother cats have a pouch in which they carry their four, or sometimes as many as six or seven, wee "kittens" at a time.

The Tasmanian wolf is the largest of the carnivorous pouched animals. Although in olden days it roamed over the Australian continent, it is now only to be found in the island after which it is named. This "wolf" looks like an odd kind of yellow dog. It has a number of bold black stripes painted across its back from just below the shoulder down to its tail. It is a strong, sturdy, solitary beast, living alone or with its mate among the hills, where it lies up in the scrub or under a fallen tree as long as the sun is high in the sky. Then late in the afternoon it goes-a-hunting. With nose to the ground it will pad steadily along on the track of a wallaby, not troubling to hurry itself until its quarry shows signs of exhaustion. Then with a sudden

quick rush it seizes and kills the helpless animal.

Although it likes a wallaby for supper, the "wolf" will kill and eat any small animal it finds out and about at night, as well as any game bird it comes across sleeping peacefully in the tangled grass. It hunts quite silently unless it is startled or excited,

when it gives two or three husky, coughing barks.

The she-wolf has four cubs at a time, and carries them all in her pouch for three whole months.

Then, finding, perhaps, that her pocketful of youngsters is growing

rather heavy, she transfers

them to a dry fern bed well hidden among the bushes. But she does not forsake her helpless little cubs. Until they are old enough to start hunting for themselves she brings food to them and remains on guard to protect them from the hungry tiger cats and Tasmanian "devils" who would love to steal one of her fat little cubs if they could.

The Tasmanian devil is only half the size of the Tasmanian wolf, but it is even more dreaded by all peace-loving little wild

folk. For this little "devil" is a bold, bad fellow that delights in killing weaker animals, whether it is hungry or not.

In looks it is somewhat like a small black bear with a white mark on its chest—except that it has a big bushy tail, which of course no real bear ever has. It has a

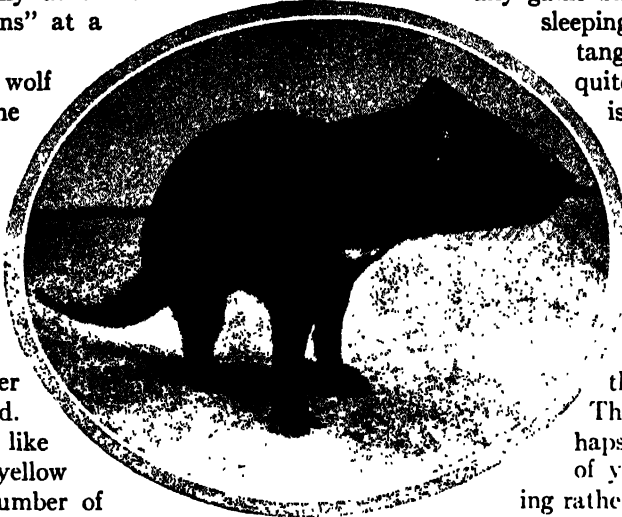


Photo by N. Y. Zoological Society

The Tasmanian devil, as this little animal is called, well deserves his name; for besides being a surly fellow who will spit and splutter and fuss when he is annoyed, he can kill animals several times as big as he is—and he enjoys doing it, too!

Here is the rabbit bandicoot, a funny mouselike animal with long rabbit ears. These and others of the bandicoot family are just as numerous, and often just as troublesome, as our common rabbit.

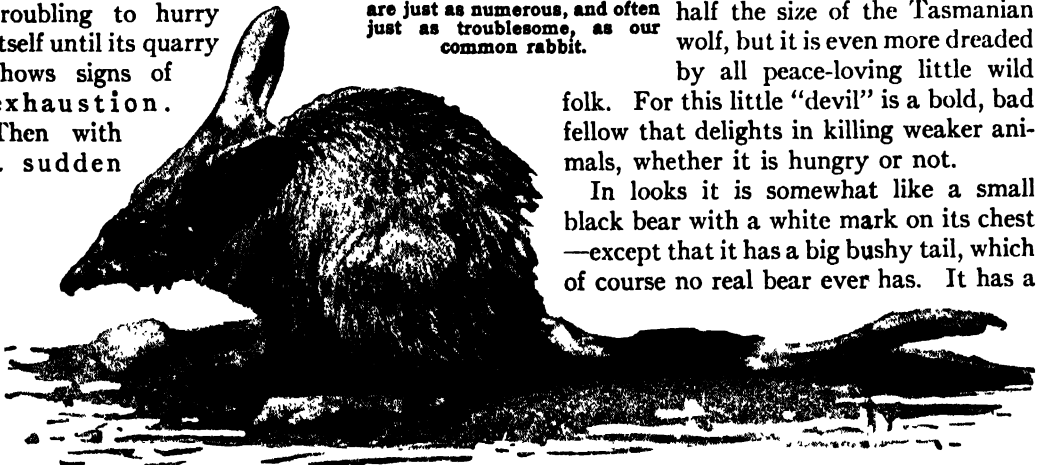


Photo by N. Y. Zoological Society

THE STRANGE BEASTS OF AUSTRALIA



Photo by N. Y. Zoological Society

The wombat is a tubby creature, about as big as a medium-sized dog. When tamed he makes an amus-

ing pet, for his movements are entertainingly clumsy and he will follow his owner about quite happily.

big head, strong jaws, and a double row of sharp teeth with which it can crack solid bones as easily as a squirrel cracks nuts. And when the devil snarls and shows its teeth it looks so ferocious that its strange name certainly seems to suit it.

No small, defenseless creature living in the wilds of Tasmania is safe from this cunning, savage little beast. It hunts small wallabies, rat kangaroos, and ground birds, and sometimes kills sheep feeding in the fields. Fleet-footed animals it must capture by strategy; for although it is so powerful for its size, the devil is very slow and clumsy, and could never overtake a wallaby or a rat kangaroo when once they were off and away.

When quite young, the little devils will climb trees after parrots and other birds, but when they are grown they are too heavy and clumsy to do this. So they are obliged to limit their mischievous activities to the ground. In the daytime they lie inside hollow logs, in holes in the ground, or in other hiding places. But after the sun goes down they are on the prowl.

The Odd Little Bandicoot

Strange to say, these savage little animals are not at all difficult to tame, and when kindly treated make most amusing pets. They look very funny frisking around in

their clumsy, lumbering way, and sit up to wash their faces like a cat, except that they use both paws at the same time.

Very different from the Tasmanian devils are the bandicoots, a strange tribe of small pouched animals almost as common in Australia as jack rabbits are in North America. There are a great many of these odd little creatures. There are long-nosed bandicoots, short-nosed bandicoots, and rat bandicoots. There seems no end to them. They may be brown or gray, speckled or striped. Yet however much they differ one from another, all bandicoots are alike in having long hind legs on which they hop and skip like kangaroos, long-clawed toes on their forepaws for digging and burrowing in the ground, and a lot of sharp cutting teeth in front with which to gnaw and bite.

The Snug Home of the Bandicoot

Rabbit bandicoots are brisk little creatures about as big as cottontails. They have long tails, long pointed snouts, and an enormously long pair of rabbits' ears standing up on the tops of their heads. Whole colonies of these small pouched people live among the scrubby sand hills in burrows which they dig out for themselves with their long claws. Each bandicoot has a home of its own, though large numbers of the under-

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ground dwellings are tunneled out side by side in a neighborly way, with each separate burrow marked by a little pile of loose earth which the energetic little miner has thrown out from its front door in its tunneling operations.

It is surprising how fast the bandicoots work. It is a waste of time to try to dig one out of its hole, for the little animal can dig much faster with its claws than a man can dig with a spade, and will always keep ahead and beat him at the game.

Like most wild animals the bandicoots stay at home in the daytime, and come out to feed and play when the shadows lengthen and the air grows fresh and cool. They feed almost entirely on the fat little white grubs which lie buried in the soil round about the roots of acacia trees. It is a funny sight to see numbers of these long-nosed little animals excitedly skipping around and scratching for their supper.

All bandicoots live in much the same way, and all carry their babies in their pockets until the wee things are old enough to fend for themselves. Rat bandicoots have not quite such long hind legs as their cousins the rabbit bandicoots, so they run on all their four feet instead of hopping and skipping along. Some of these little animals settle themselves in parks and gardens, where they make themselves quite at home in shallow dugouts just below the surface of the soil and assist the gardeners by destroying worms and beetles and grubs of all sorts. One seldom sees the little helpers at work, for they are very shy and retiring, but at night when all is still one may hear them softly grunting and squeaking as they busily scratch and scrape in the soil to unearth the hidden insects.

In comparison with the sprightly little bandicoots the slow-going old wombat

(wŏm'băt) is quite a big animal. It is about the size of a small pig, and is not unlike a giant guinea pig in appearance. Its legs are very short and stout, it has the merest stump of a tail, and its fur is so coarse and thick that it is said to make an excellent doormat.

Living alone in its burrow in the side of a hill the wombat would seem to have a pretty dull time. But it seems quite contented with its lot. It seldom strays far from home, for it finds all the food it needs, such as grass, roots, or green stuff of all kinds, growing right around its doorway.

The wombat's home is no carelessly-scraped-out hole, but a comfortable, roomy chamber at the end of a tunnel some ten or fifteen feet in length. Here the queer animal prepares for itself a nice soft bed of split bark, on which it spends long hours in peaceful slumber, undisturbed by the world outside. Sometimes the wombat will take a sun bath just inside the entrance to its house. But more often it does not emerge from its seclusion until late in the afternoon. It potters round munching grass and digging up roots until its appetite is satisfied and then bundles back to bed.

A Pet That Loves to Sleep

You would hardly think that such a dull, sleepy-headed animal would make a very interesting pet. Yet in Australia people sometimes keep tame wombats in their gardens, where the animals are quite happy and contented so long as they are provided with a comfortable bed in a dark corner, where they can sleep undisturbed just as long as they want to.

A tame wombat often grows quite attached to its owners, after it has learned to trust them. It will follow its friends about and try to attract their attention by gamboling clumsily in a most ridiculous way.



Photo by Australian Government

Here is your teddy bear come to life! Of course the koala is not related to the bear, but with its plump little body and stubby legs it gives quite a fair imitation of one.

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It loves to be noticed and petted, and we know of one that liked to be cuddled as a baby would be. When taken up it would give a little grunt of satisfaction, shut its eyes, and immediately drop off to sleep!

Another amusing Australian animal is the koala (kô-ä'lâ), or "native bear." It is a

most fascinating little creature, so exactly like a fluffy "teddy bear" that one is tempted to wonder if the man who first made a teddy bear did not take a koala for his model! The little animal's small plump body and short stout legs are clothed with thick woolly fur. Its ears are round and fluffy, and its funny flat nose looks just as if it were cut out from a piece of leather and stuck to the middle of its face.

This queer little "bear" lives in the gum trees. There it climbs slowly about, clinging to the slender swaying branches right at the top of the trees; for it has stout

its patient mother until it is nearly full-grown.

The koala lives almost entirely on the oily leaves of the gum trees. It likes nothing better than gum leaves for breakfast, dinner, and supper. It usually carries a few leaves about with it, stuffed into its bulging cheeks,

Phalangers are the opossums of Australia. They are timid animals and like to live in forests, where they can hide in hollow trees during the daytime and skip about the branches at night, when their enemy the eagle cannot see them.



Top: gray phalanger.
Center: flying opossum. To the left: vulpine phalanger.

Photos by N. Y. Zoological Society

claws on its fingers and toes, and no matter how the wind may blow, the sturdy little animal is never shaken from its hold. Although it is such a heavy, clumsy little fellow, the koala is much more at home in the tree tops than on the ground. The mother even moves about serenely among the highest boughs with a baby almost as big as herself riding on her back.

While the baby is very small the mother, like all pouched animals, carries it in her furry pocket. But when it is three months old the little creature scrambles out, climbs up on her back, and clings with its claws to her thick fur. And so, riding pickaback, the lazy young "bear" is carried about by

so that it can have a little something to eat between meals. For these little animals have cheek pouches for storing food, just as the grimacing monkeys of the African forests have.

Although they are not very happy on the ground, where their short stiff legs make progress on all fours very slow and awkward, koalas do come down from the tree tops now and then. They come down backward, clasping the trunk with their arms and

legs and sticking their claws into the bark to prevent themselves from descending in too great a hurry. They go up again in a succession of funny little jerky jumps, each jump sending them four or five inches further up the tree.

The Trusting Little Koala

If you surprise a koala near the ground on one of its upward or downward journeys, the little animal will show no fear. Instead of trying to scuttle out of sight, as most wild things do, it will calmly turn its head round and look at you with an innocent, confiding expression on its funny babyish face, as if it were quite sure you would not

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harm it. And indeed, it is hard to see how anyone *could* harm such a gentle, trustful little animal.

A large number of pouched animals are tree dwellers, but we are not likely to see very many of them unless we visit their native haunts after the sun has gone down. For that is the time when the shy little wild folk leave their sleeping quarters and begin to stir about.

The cuscus (kūs'kūs), who has spent the day hidden in the thick foliage of a forest tree, now wakes up and moves slowly and cautiously through its leafy world, nibbling the leaves and hunting for little birds that are peacefully roosting in the trees. The cuscus is rather a pretty little animal dressed in a pale gray coat marked with large reddish spots and patches. It is about the size of a small cat, and has a foxlike little face, a pair of very big round eyes, and a long tail that is furry halfway down and then quite bare to the tip. This peculiar tail is most useful to the cuscus when the animal climbs about the trees, for the bare end can be coiled tightly round the branches and so used as an extra hand.

The cuscus belongs to the phalanger (fā-lăn'jēr) family, a large and distinguished tribe of pouched animals often called the Australian opossums. There are many different members of the family, and they vary in size

from a cat to a mouse. All live in trees and have thick soft coats, and many of the larger ones are hunted for their fur.

The common opossum is a foxlike little animal about as big as a cuscus and clothed in soft red fur. It lives high up in the

branches of the tall gum trees, where it is more often heard than seen, for it passes the whole of the day up in a hole in a tree trunk. At night it wanders about in the tree tops, uttering from time to time a loud chattering cry as it hunts for insects, small birds, and birds' eggs.

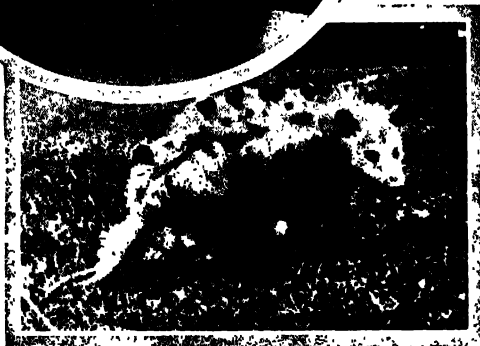
The ring-tailed opossum is a smaller animal with a very long tapering tail which is white at the tip. "Ring-tails" are more sociable than most opossums. Sometimes a whole colony of them will live side by side in

a neighborly way in the low trees and bushes on scrubby lands. The lady ringtails usually make large nests of ferns, twigs, and leaves.

These are about as big as a football and have a hole in the side through which the owners pop in and out. But these cozy homes are not, as you might suppose, made for the babies of the colony, since, like all opos-



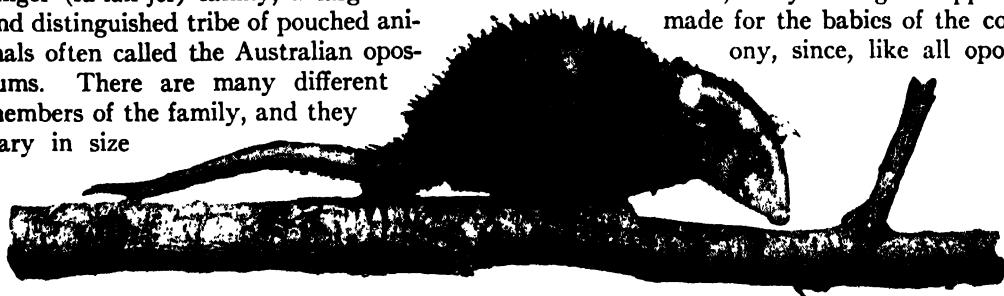
To the left you see the South American opossum, rather more burdened with maternal cares than the southern opossum in the square below.



Photos by Nature Magazine

Our poor opossum has so many babies to take care of that she is practically "snowed under"! Most mothers of the animal kingdom take the duties of motherhood seriously enough, but the opossum wouldn't *think* of going out without taking her children with her, and of course she has no perambulator!

The banded opossum has a long ratlike tail which is extremely useful in climbing, though certainly not very elegant.



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sums, the ringtail carries her babies on her back when they are old enough to leave her pouch. The nests are simply cozy bedrooms in which the little animals sleep during the day. The male ringtails do not trouble to make nests; a deep dark hole in a tree trunk is good enough for them!

Though they are such sleepy-heads by day, ringtails are lively enough at night. Their excited, "Chit! chit!"

"chit!" may often be heard on warm summer evenings as they run about the trees and bushes looking for something nice for supper. They eat the leaves of all kinds of trees, and are especially fond of the flowers of the peppermint gums. If there are any gardens near they will troop in after dark and feast on the

leaves of roses and fuchsias.

Most charming of all the phalangers are the flying opossums, often called flying squirrels. They are really beautiful little animals, with big shining eyes, soft silky fur, and long, bushy tails; and like true flying squirrels they have a fold of skin connecting the forelegs with the hind legs. This acts as a parachute.

These pretty little creatures live in holes in the trees, sometimes making little nests of leaves inside the holes. At night they run nimbly up and down the trees, taking gliding flights from bough to bough or from one tree to another.



Above is the rat-tailed opossum, skillfully scratching himself with a hind leg.

Here is a wholerow of Virginia opossums. These are the animals which Southern Negroes are so fond of eating, but which seem to thrive despite the persecution.

To the left is the mouse opossum, a little animal you might very well take to be a mouse if you did not happen to notice that the upper part of his tail is furry.

Photos
by N. Y. Zoological Society

Some of the flying opossums are as big as gray squirrels, others as tiny as mice. But they are all delightful little animals, and since they are very gentle and easy to tame they are often kept as pets in their native land. As they cannot bear strong light they must have a sleeping box provided for them in some dark corner and be left to sleep undisturbed during the day. Then in the twilight the "flying squirrels" will come out, run and climb and float about, and take flowers and leaves and fruit from their owners' hands.

The American Opossum

American opossums are the only pouched animals that do not live in Australia. In South and Central America there are several of this New World tribe of Old World animals—woolly opossums, distinguished by their thick, soft, woolly coats; mouse opossums, pretty little creatures no bigger than a mouse; wee shrew opossums, smallest of all the New World tribe; and water opossums, which have webbed toes on their hind feet and spend a large portion of their time in the water chasing fish, just as the otter does. They are all flesh-eating creatures, and are really more nearly akin to the Tasmanian

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wolf and Tasmanian devil than are the gentle Australian opossums across the sea.

The Virginian opossum, famous all the world over for its clever trick of "playing 'possum," or pretending to be dead when it is captured, is the only one of the family to make its home in North America. It is an unattractive little creature, not quite so big as a raccoon, with a queer, pale face and long, piglike snout. It boasts a long, bare, ratlike tail and a rough dingy-gray coat which looks as if it needed a good brushing.

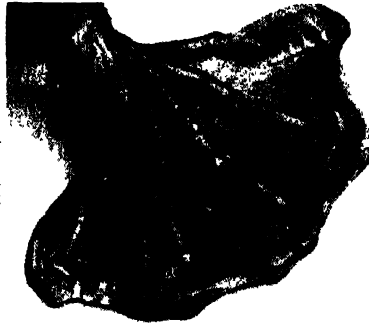
On a fine moonlight night the Negroes of the southern states delight to hunt the 'possum with dogs and poles, old guns and pitch-pine torches. The frightened little beast takes refuge in a tree, hoping by keeping very still to escape the

eyes of its enemies. But when it is discovered and brought down, Bre'r 'Possum flops down and just "dies" instead of fighting and struggling for his life.

A 'possum "playing 'possum" is about the deadest-looking thing im-

The duck-billed platypus is probably the oddest of all the strange animals that live in Australia. It is almost more than one can believe—that a creature which nurses its young should lay eggs and have the ducklike bill and webbed forepaw you see below.

Photos by N. Y. Zoological Society



Below is the platypus himself, a timid creature that lives in burrows dug into the banks of the deep, still pools in Australian rivers. During the daytime he dozes quietly in his underground home, but toward evening he comes out to play in the water and search for something to eat. When he is sleepy he will yawn just like any other little mammal, but because of his bill, he looks very ridiculous indeed when he so indulges himself.

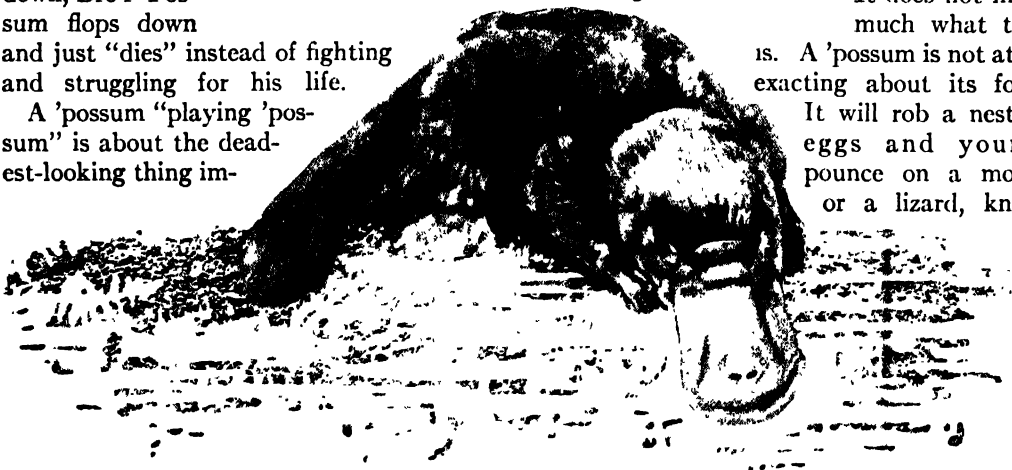


Photo by N. Y. Zoological Society

aginable. There it lies, limp and motionless—eyes closed, 'tongue hanging out, and lips drawn back from its gleaming white teeth. You may pick the creature up and throw it down, thump it and bump it, but not the slightest quiver will the rascal give to show that it is tricking you. But just turn your back for a moment, and the "dead" 'possum springs to life again in a trice and is streaking for safety as fast as its four legs will carry it!

It is rather hard on the poor little beast that nearly everyone knows its wily trick, especially since it is the only trick it "has in its pouch," so to speak. It does not show much intelligence in any other way. In fact, the Virginian opossum is on the whole a dull, slow-witted little animal. It sleeps all day in a hollow

tree or old tree stump and creeps about at night in search of something good to eat.

It does not mind much what that is. A 'possum is not at all exacting about its food.

It will rob a nest of eggs and young, pounce on a mouse or a lizard, knock

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This is not the side the echidna usually exposes to public view. What his enemies see is a round ball of

down a blundering dor bug, grab a cricket that cheerily chirps at the door of its house. If it lives on the borders of a town or village, it will wander about the streets when the good folk are in bed, snuffling in the dust for mouldering scraps. Sometimes it creeps into a poultry house and makes off with a chicken.

The mother 'possum has so many children that at times she must feel like the famous old woman who lived in a shoe. She may be trotting round with from six to thirteen sturdy young 'possums riding on her back, while at the same time a new batch of babies is snugly stowed away in her pouch.

At first the new babies are no bigger than your thumb nail, but nothing is seen of them until they have grown as big as mice. Then the whole bunch scrambles out of mother's pocket and climbs up on her back. And there for many a day the young 'possums ride pickaback, clutching their parent's fur with their tiny claws and twisting their wee tails tightly round her tail. So, even when the mother climbs the trees to pluck per-simmons and other wild fruits growing in

decidedly uncomfortable spines, for like the hedgehog, the echidna curls up when he is in danger.

the woods, her babies are so firmly anchored to her back that never a one tumbles off.

And now we must take one last trip across the water to Australia if we are to see the two most curious animals of all. For there we shall find the duck-billed platypus (plăt'î-pŭs) and the echidna (ê-kîd'nâ), or "porcupine anteater"—the last survivors of an ancient race of creatures, older and stranger even than the pouched animals.

Although they are really mammals, these two strange beasts are in some ways more like birds or reptiles; for they have beaks instead of snouts, and stranger still, they actually lay eggs. So to distinguish them from other warm-blooded quadrupeds, the duckbill and the porcupine anteater are called "egg-laying mammals."

The duckbill looks like a very large mole that has been fitted out with a broad flat duck's bill. It has a soft, velvety fur coat, four flat webbed feet provided with strong claws, and a broad flat tail rather like a beaver's tail except that it is clothed with hair instead of scales. This odd little animal is seldom seen, for it is very shy and

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retiring. It makes its home in the banks of some quiet pool or backwater and there it spends most of the day curled up in peaceful slumber. The burrow which the animal scrapes out for itself with its claws is a long winding tunnel leading to a roomy sleeping apartment. It has two entrances, one above and one below the level of the water.

The burrow is usually occupied by a pair of duckbills. Late in the afternoon one may see the odd little couple enjoying a pleasant hour or two sporting and feeding in the water. They swim and dive and float, and paddle about in the mud at the bottom of a pool or stream, scooping up worms, freshwater shrimps, and the like with their broad bills. Their cheek pouches bulge with the food they stuff into them.

Sometimes one or the other will turn on its back and float upside down for a bit, with its head and its tail in the air. Or they may both scramble out on the bank and grub about in the mud for snails and insects. They can run very fast on dry land, in spite of their flat feet and short legs, but they are really much more at home in the water.

In the springtime the mother carries a large quantity of weeds, grass, and leaves into the sleeping apartment and piles the stuff up in a heap to make a rough kind of nest. On this she lays two or three white, soft-shelled eggs, and then proceeds to sit on the top of them until they are hatched. She is very nervous and fussy while engaged in this important business, and if anyone disturbs her she gives a low, hissing growl.

Baby Duckbills

When the baby duckbills hatch they are queer, helpless little objects, as bare as the back of your hand. And as the mother has no pouch, she folds her broad tail back underneath her body to make a kind of furry pocket to keep the babies in until their coats have grown.

At first she feeds her young ones with her own milk, as all mammals do. But later on, when they are able to eat solid food, she leaves her charges at home on the nest while she goes out to collect beakfuls of water snails for them. Since the little duckbills do not grow up very quickly she is kept busy

providing for her small family until nearly the end of the year.

The porcupine anteater, or the echidna, as it should be called, lives in open forests or scrub land. The most likely place to find the queer prickly creature is on a rough and stony patch of ground. There, late in the afternoon, it may often be discovered nosing and scrabbling among the stones, hunting for the ants which make their nests underneath.

How to Tell an Echidna

If it were not for its long snout you might easily mistake the animal for a porcupine, for its head and its back are covered with thick short quills. With the long stout claws on its front feet it turns over the stones and digs the ants' nest out of the ground, while a long sticky tongue pops in and out of its snout, licking up the insects as fast as they appear. When its appetite is satisfied the echidna retires to a hollow log or a hole under a large stone, and there it stays dozing the hours away until it begins to feel hungry again.

The mother echidna lays only one leathery-shelled egg at a time. She does not sit on it as the duckbill does. She picks it up with her beak and tucks it under a fold of skin beneath her body. There she keeps it safe and warm until it is hatched, and baby echidna stays in this pouch until its quills begin to grow.

And now that we have been introduced to the last and least of the higher animals—the duckbills and the echidna that belong to "the lowest order of the milky class"—it is time to make our bow and take leave for the present of the humble four-footed wild folk, "our poor brothers and sisters," as good St. Francis called them. They are all our relatives, wayfarers in a beautiful but difficult world, just as are you and I—mysteriously directed therein by an instinct that the wisest scientist is at a loss completely to account for. Treat them gently, then, and learn, if you can, to understand their mute, appealing ways. For so, in a short space, they can give you more genuine pleasure than is to be had from a lifetime of hunting them with a gun.

ZOOLOGICAL PARKS

Reading Unit

No. 20

WHAT TO SEE AT THE ZOO

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

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How does the white fur of a polar bear help him?

How are sick animals cared for in the zoo?
How does a zoological park obtain its animals?

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Leisure-time Activities

PROJECT NO. 1: Visit your local zoo or the menagerie of a good circus.

PROJECT NO. 2: Collect and mount pictures of the animals of the world.

Summary Statement

Going to the zoo is almost equivalent to traveling into out-

of-the-way corners of the world.

WHAT TO SEE AT THE ZOO



Photos: Upper left, courtesy Australian News and Information Bureau, below and upper right, courtesy British Information Services

This goat and chimpanzee in the London Children's Zoo seem pleased with an arrangement that makes it possible for them to get acquainted with visitors. And so do the koala, kangaroo, and emu in Australia.

WHAT TO SEE AT THE ZOO



Courtesy British Information Services

WHAT to SEE at the ZOO

How the Queer and Clever Creatures from All Over the World Find a Home All Together in Our Parks

GOING to the zoo is just a little like traveling all over the world in an hour or so. For there we can see things which otherwise we should have to search throughout the world for, from the arctic wastes of ice to the blazing jungles of Brazil and Africa and India. And what we can see is to most of us the most interesting part of all creation—the strange and beautiful and terrible creatures in fur and feathers with which Mother Nature has seen fit to fill the world.

So let us go for a little trip to the zoo. We shall look at the great polar bear in his icy bathing pool, and then pass on to the lion house, where the lions and tigers, the leopards and jaguars and other “big cats” will probably be roaring. Then we can go around the paddocks where the deer are grazing, with the antelopes, the buffaloes, the moose, the mountain sheep and goats; next, to the bird house, where amid many other gorgeous creatures the birds of paradise

will vie with the dainty little humming birds in their rainbow hues. And then perhaps we shall skirt the pond where live the king penguins that look for all the world like elderly gentlemen in evening dress waiting to sit down to some solemn civic banquet.

These and many other creatures we shall see, for which people have ransacked the world to stock our zoo for us. No distance has been too great for them, no place too hot or cold, no trip too perilous, no search too hard, no creature too large or small or dangerous, and no price too great, if only they could get one more of nature’s wonders for us to look at.

People have been doing this for a long time. The pharaohs in Egypt had their wild animals in cages. The emperors of Rome kept their menageries. They liked to look at the strange animals, and to have them in their great pageants and processions. In Rome they also put the fierce creatures to all sorts of cruel sports, from fighting one

WHAT TO SEE AT THE ZOO

another to eating Christians. In the Middle Ages there were a good many collections of wild animals, in various countries—Italy, France, and Germany, Holland and England. They usually belonged to the king, and so made up the royal menagerie. In England this was housed in the famous Tower of London, where the poor animals must have been pretty unhappy in their dark and narrow quarters. But it was not until 1831 that they were moved to the great Gardens in Regent's Park, where there is now one of the best collections in the world, open to all the public. And as in London, so in many other cities—Paris, Berlin, New York, and elsewhere—there are now vast zoos owned by all the people.

Animals Live Longer in a Zoo

In these everything is done that can be done for the health and comfort of the animals. The creatures are all put into surroundings just as similar as possible to their far-away homes. Nearly all of them live to a far greater age than they would in their native haunts, where they have all sorts of foes of their own kind, as well as human hunters. They are all well fed—but the public must not feed them too, or it will ruin

their stomachs! Many of them increase and multiply. And instead of the old, dark cages in which they used to be crowded in stuffy and over-heated air, they have houses and gardens in which they can move about freely and enjoy plenty of air and sunshine.

A Visit to a Zoo

All this while we have been getting to the zoo, and here we are at last! Look at that great pile of rock that rises like a little mountain with a low stone wall around it. And see the great old baboon with his wife climbing up to the topmost rock to sit and bask in the sun. There are a dozen or so others having a jolly game of hide-and-seek around the lower slopes, bounding from one rocky shelf to another with the greatest ease.

But can they get at us? No, there is no danger. To be sure, the keepers have not put any bars around them, for they want us to see. But just look down over the wall and you will notice a wide ditch all around the baboon's rocky hill; and agile as they are, the monkeys will never jump that ditch. So we can watch them playing and frolicking among their rocks, without ever a fear of their hurting us or of our hurting them.

And when they are tired, we can see them resting together in happy groups where they look for all the world as if they were talking to one another—and maybe they are, in their own way!

And what do they do when the rain pours? Do they get

This baby zebra would much rather take his dinner in the way Nature intended. But the keepers know what is best for him, and have a skillful way of making him agree to it, whether he prefers it or not.



Photo by N. Y. Zoological Society

WHAT TO SEE AT THE ZOO

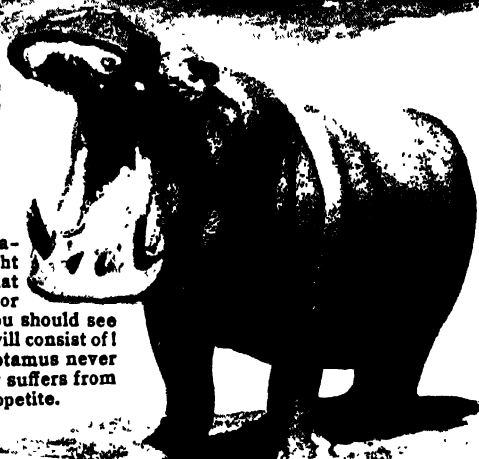
This anaconda is being handled gently but firmly—the best way with anacondas. If ever he managed to throw a coil around one of the keepers, it would be the end of the man.



At the left. No animal at the zoo has an easier gait than the awkward kangaroo. A Parry kangaroo wondering how all the folks are, back in Australia.



The hippopotamus at the right is suggesting that he is ready for dinner. And you should see what his meal will consist of! For the hippopotamus never diets and never suffers from loss of appetite.



No one could deny that this baby zebra has patterned after his mother.

Any child would like a Teddy bear as lively as these brown bear cubs.



WHAT TO SEE AT THE ZOO

wet and cold? Not a bit of it. They just go inside their hill. For all those little tunnels you see lead down into the interior of the hill, and down there is a great central hall, warm and dry and lighted by special "daylight" electric lamps. So when the weather is too bad outside, the monkeys can disport themselves all day long inside

to peer at them through any iron bars or be afraid that they will reach out a hairy paw for us. So we can stand and watch them sitting up and begging for buns; or rolling over and going through all sorts of clumsy antics. When we get up above the polar bears' den, we can look down at these great fellows basking in their snow-white shaggy coats, or diving off the rock into their cool bathing pool, where they swim about and make sport in the water games they love.

Do you know why a polar bear is white? Just to make it hard for his

They're a long way from the Pole, but these polar bears in the New York zoo seem to get a good deal out of life, just the same.

their hill. And in the evening when they have had their supper and bedtime comes around, the lights are turned out so that they may go quietly to sleep. The lights will come on in the morning.

The mountain sheep and goats have a much larger hill, built up in a series of terraces, one above the other, with the top one built up into rocky crags such as the creatures love to climb about on.

Why Polar Bears Are White

And the bears have still another big hill. All over this one there are paths running in various directions to let us walk right in among the bears and look up at them or down on them in their inclosures. Of course there is always the same sort of ditch between them and us, so that we may not have

foes to see him in the ice and snow where he lives. For the same reason the chipmunk is brown to match the fallen leaves on the ground, and the katydid is green in order that he may hide among the green leaves on the trees. Nature takes care of nearly all her creatures in this way—and some beautiful colors come as the result!

Not very many people are really fond of reptiles, though there are some fine sights in the reptile house. They are all behind heavy



The mother and child below are certainly looking over the situation. They are Nubian giraffes who condescend to live in the New York zoo.

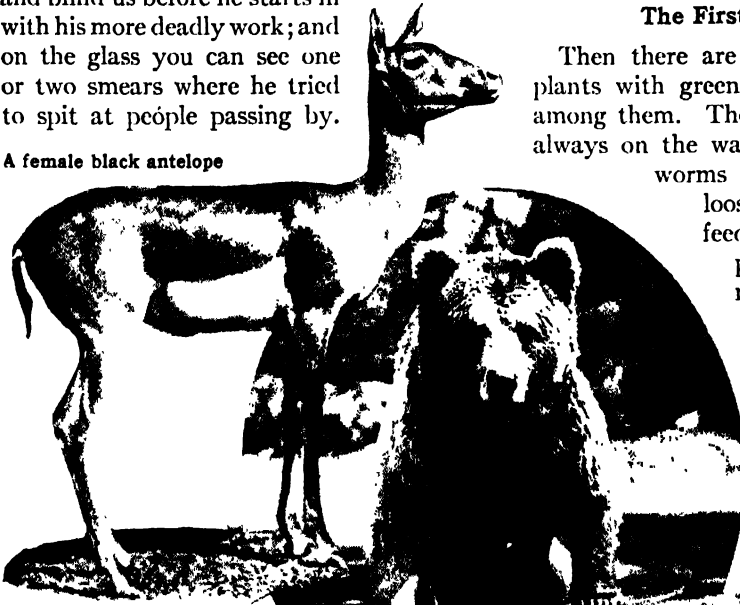
The charming child on the left is a baby gorilla. The other one is a chimpanzee.

Photos by N. Y. Zoological Soc.

WHAT TO SEE AT THE ZOO

plate glass, or else few of us would ever get out of the reptile house alive. There is one of the beasts that can even spit at our eyes and blind us before he starts in with his more deadly work; and on the glass you can see one or two smears where he tried to spit at people passing by.

A female black antelope



Just out of his bath. This hairy-eared bear finds that there is a great deal to be said for the bathtub with which he is accommodated in his apartment at the New York zoo.

If you do not shiver too much you can have a good time watching the great pythons and boa constrictors sliding round the trunk of the tree in their inclosure, or coiled up asleep in marvelous knots among the branches. They look very soft and tender, but if you ever get a safe chance to touch a boa constrictor you will find him as tough as a hickory tree.

Making Lizards Feel at Home

The lizards are pretty things to look at—so beautiful in color and so rapid in their movements. Each of their cages has a little pool of water and some rockwork and growing plants, to let them feel at home and to show us how they look in their natural dwellings. The crocodiles and alligators have a

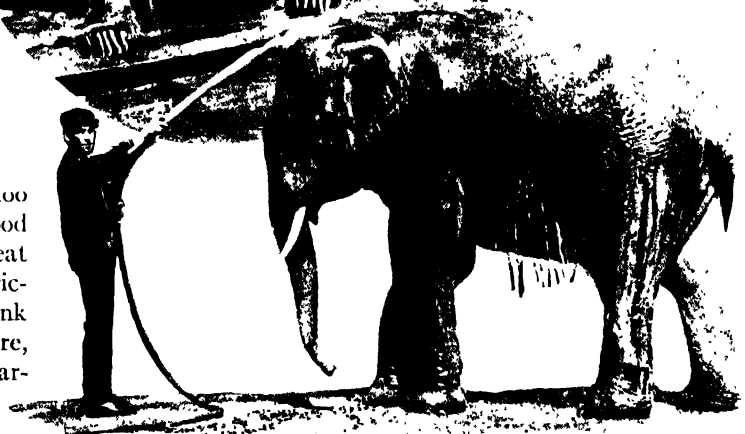
large bathing pool with a sandy beach to crawl out on when they are tired of swimming and want to bask in the sun a bit.

The First Call for Dinner

Then there are some cages full of leafy plants with green little tree frogs nestling among them. Their bright, beady eyes are always on the watch for any flies or meal worms that the keepers may let loose in the cage for them to feed on. In the shallow pool down below you may see some great, fat bullfrogs squatting.

Most of these reptiles have come from hot countries, and their house has to be specially heated.

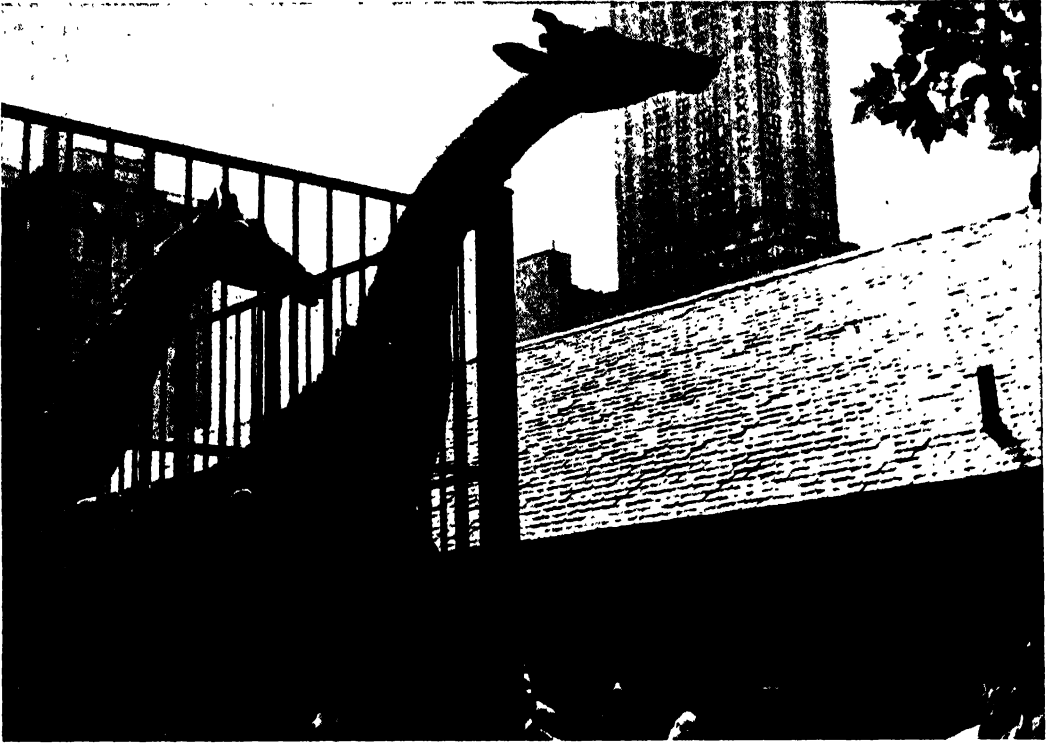
"Your bath is ready, sir." One wonders whether this Indian elephant ever had such capable service in his native jungle.



Photos by N. Y. Zoological Society

We are soon glad enough to get out into the open air again and go over to the great pond, with the shelving rocks all around it, where the seals and sea lions live. The sea lions are making a great hubbub of barking, and are leaping frantically from their rocks into the water. They have just caught sight of the keeper coming along with a great pail full of fish for their dinner. And now as he reaches the side of their pond, he starts throwing in the fish one at a time, while the sea lions catch them in their

WHAT TO SEE AT THE ZOO



Photos from Frederic Lewis, upper by Lawrence D. Thornton

More and more zoos are making it possible for visitors to make friends with the animals—or at least with certain of them. Lions and tigers, snakes and bears still insist that man keep a respectful distance. But an elephant who has learned how will be quite willing to give a ride to a party of merry-makers like the ones

above. And the living skyscrapers in the upper picture will be unembarrassed by the staring crowds. There is one important thing to remember, however. The animals must never be fed without the keeper's permission. They are living under very unhappy conditions in order to give us pleasure. Give them a square deal.

WHAT TO SEE AT THE ZOO

mouths or dive after them like a flash if they miss. The diving and swimming are all so fast that we can hardly tell which of the splashing animals get the fish. But the keeper knows. He has a pet name for each sea lion, and he watches to see that each one gets his fair share of the feast.

But now the real lions are roaring in earnest, for they also know it is time for dinner. So we hurry back to their house. While the lions all roar, the tigers and leopards pace back and forth restlessly in their dens, with low, purring sounds of excitement. And here comes the trolley, laden with great hunks of raw meat and bones to gnaw. The keeper digs into it with a long pointed rod, and then passes the chunks to the greedy creatures, who seize upon their dinner with terrific growls and snarls.

We may leave these monsters to enjoy their own table manners, and go over to the big bird house, where we shall see some of the most gorgeous colors in the world and hear the sweetest songs. Here are the big and little feathered folk from all over the world. Some are sober gray and russet flutterers from the temperate regions, with soft, sweet melodies issuing from their throats. Others are gilded creatures from the tropics—parrots, cockatoos, and great scarlet, golden,

yellow, and blue macaws, all chattering and screeching; and gorgeous birds of paradise with harsh, discordant cries. It does not take us long to find out that the most splendid birds do not usually have the finest voices, or the most lovable ways.

And now here we are at the stall where we buy our tickets for a ride on the old Indian elephant or the camel, or perhaps in the carriage drawn by a team of llamas from South America. It is great fun to perch up on the howdah, atop the elephant's back, and make out that we are Indian rajahs on our slow, swinging beast. And so it is also to mount the camel and fancy we are Arab sheiks crossing the African desert. But we do have to hold on tight, for the motions of the "ship of the desert" are far less easy than the steady swing of the big elephant. In fact, there are some people who will tell you at the end of their first ride, that they have now found out why the camel is called the *ship* of the desert!

And now I fancy we must go home again. Of course there is a great deal more to see, but we can always come again. The gardens are going to close now for the night. And even if we knew it was all safe, really and truly, I don't think we should love to spend the night here.



This industrious inhabitant of the New York zoo cares less for labor than for peanuts. But he has found that by some law of nature one always follows the other—so he is hard at work!

Photo by N. Y. Zoological Society

DOMESTICATED ANIMALS

Reading Unit No. 21

MISTRESS PUSS AND HER WINNING WAYS

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

The difference between dogs and cats as pets, 4-483
How a cat is related to the lion, 4-484
How a cat's whiskers are used, 4-485

How cats can be trained, 4-485
How Egyptians treated cats, 4-487
Where our cats came from, 4-487
Different kinds of cats, 4-487-88

Things to Think About

What sort of personality has the cat?
What evidence is there that the cat is related to the lion?
What enables cats to see well at night?
When were cats first tamed,

and by whom?
How did cats come to America?
What kinds of cats are called "aristocratic"?
In what way is the Siamese cat different from all other cats?

Picture Hunt

Why is a kitten interested in a mouse? 4-484
Is there such a thing as a pedigreed cat? 4-485

How is the Siamese different from other cats? 4-486
Why has the Persian cat become very popular? 4-487

Related Material

Of what plants are cats especially fond? 2-175
What characteristics of jungle "cats" do you recognize in

your own cat? 4-285
How did catfish get their name? 3-242

Summary Statement

Cats are descended from jungle ancestors. Their sheathed claws, love of the night, and their ability to pounce on unsuspecting mice and birds remind one of lions and tigers. While we know alley cats

best, we sometimes see or own a long-haired aristocrat—the Persian cat. Other unusual types are the Manx and Siamese cats, and Mexican hairless cats.

MISTRESS PUSS AND HER WINNING WAYS



The charm of a kitten lies in the fact that no matter where you put it, the little thing will always be pretty and graceful and amusing.

Photo by Sports & General Press

MISTRESS PUSS *and* HER WINNING WAYS

Some Interesting Facts about the Present Habits and Noble Ancestors of One of Our Best-loved Four-footed Friends

MARK TWAIN once remarked: "A home without a cat, and a well-fed, well-petted cat, may be a perfect home—*perhaps*"—but he evidently did not think so. And there are many people like Mark Twain to whom a home does not seem *quite* a home without a comfortable pussy purring contentedly by the fire.

Next to the dog, the cat is our most familiar four-footed friend. But the dog's ways are not pussy's ways. A dog who shares our hearth and home wants to do something to prove his affection for us. He will guard his master's property against all comers, greet him with wagging tail and joyful barks, come when he is called, lie patiently at his master's feet, be ready at all times to go for a walk, and if he is a well-trained dog, will trot obediently at his master's heels.

But Mistress Puss is not like that. If she

condescends to walk with you she does not follow, she always leads the way. She lives with us in our home, expects to be fed and petted, appropriates the coziest corner by the fire and the most comfortable chair as her right, but she never expects to do anything in return for these favors. To be sure Puss will catch mice, if there are any of these troublesome little animals about, but this she does for her own pleasure—not to please you. She will come when she is called if she has a mind to, not otherwise. She walks in and out of doors as she chooses in the most independent manner, and behaves, in fact, as if the house and all it contains actually belonged to her. Yet in spite of all her airs and foibles, Puss is a most lovable animal and very affectionate to those to whom she attaches herself.

There is really some excuse for Mistress Puss in being so reserved and independent.

MISTRESS PUSS AND HER WINNING WAYS

She belongs to the great cat tribe, and so is entitled to claim relationship with the King of Beasts, the mighty African lion who stands at the head of the cat tribe, and with the lordly tiger of the Indian jungles.

In many ways Puss shows her kinship with her imposing relatives—the lion, tiger, leopard, jaguar, and cougar. She is a born hunter, and she stalks her prey in the very same way as the big wild hunting cats stalk larger game in the forests and jungles all the world over. Her feet are shod with soft, elastic pads; and with silent, stealthy steps she creeps nearer and nearer to her victim, then springs upon it with a sudden bound. Or she will lie in ambush, ready to pounce out on any luckless mouse or bird that comes within striking distance of her sharp curved claws. When she is walking about or playing with you, Puss draws her claws right back within sheaths of thick skin; and the paw she pats you with feels as soft as velvet. But those hidden claws are shot out in a flash to seize her prey, or to give anyone who annoys her a nasty scratch. So it is not only cruel, but silly, to tease a cat. Wild cats keep their claws sharp and ready for use

by tearing at the rough bark of the forest trees. Mistress Puss keeps hers in order by clawing the legs of the chairs and tables—if she is allowed to spoil the furniture in that way!

A cat walks daintily on the tips of her toes—as a dog does. She is not a champion runner, as a dog is; but if she is chased Puss can usually escape her enemy by springing up into a tree or to the top of a high wall. There the dog, who is not so nimble as a cat, cannot follow her. And from her post of vantage, with arched back and lashing tail, Puss spits and swears at the disgruntled dog in the most insulting way.

When Puss goes hunting she trusts to her sharp eyes and her quick ears to locate her prey. Her sense of smell is not very keen, so she does not hunt by scent, as a dog does.

In the daytime, as you have often noticed, the pupils of a

cat's eyes contract to narrow, vertical slits, through which the cunning animal can nevertheless see just as much as she wants to. At night the pupils expand to let in every available ray of light, and a cat's eyes gleam in the darkness like two round green or yellow lamps. So when prowling about at



Perhaps the little white mouse thinks these kittens are too young to be dangerous. At least, he does not seem to be properly frightened, though they are clearly as interested in a mouse as their ancestors have always been.

These three engaging little creatures are just cats, of no special breed. They are probably related to all the other cats in the world—except perhaps to some of the blue-blooded kind that take prizes at cat shows.

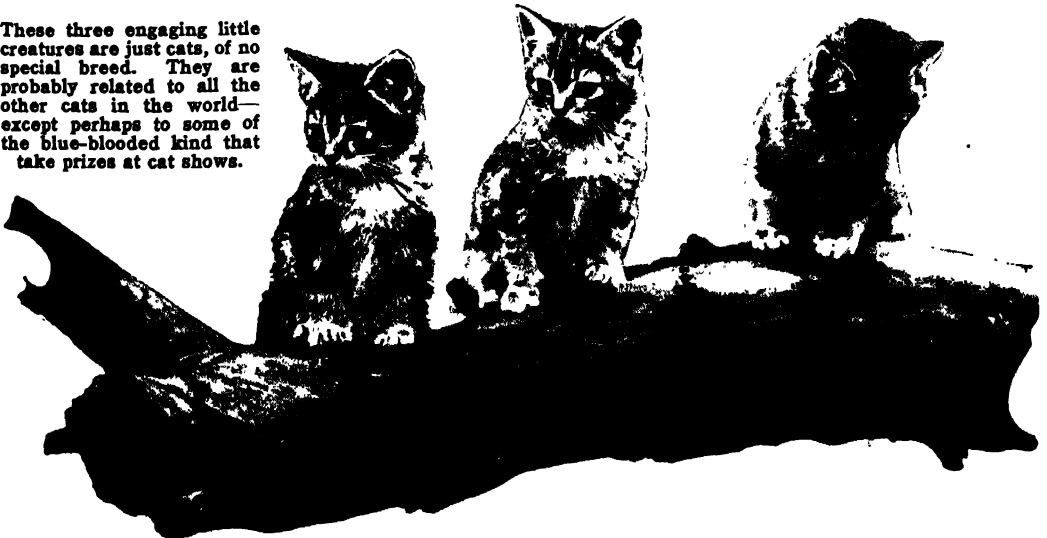


Photo by Olivier. Paris

MISTRESS PUSS AND HER WINNING WAYS

night cats need very little light to guide them, although they are not able to see in absolute darkness, as many people suppose.

But cats have another sense by which they find their way about when the light fails them altogether. Those handsome whiskers of theirs are really highly sensitive feelers, or organs of touch, with which they feel and test everything that comes in their way. Wild cats depend chiefly on their whiskers to help them thread their way through dense thickets and jungles on dark nights.

Although cats are not so quick and ready to learn as dogs, they are really very intelligent; and if their education is taken in hand when they are kittens, they can learn to do, or not to do, a great many things. But in training a cat one must always be very patient and persevering. You can do nothing with it unless you gain its confidence and affection. If you lose your temper with your pupil the case is hopeless. Your pussy will never learn anything.

We had two beautiful long-haired cats—called Nicky and Clootie—whom we brought up from kittenhood and trained not to catch birds. Of course to catch birds is a natural instinct which all cats have. Both these pussies could be trusted in the yard where tiny newly-hatched chicks were running about; they would never touch even one of the wee things. Sometimes when the cats were lying down, the chicks would jump up on their backs or brush. If

foolishly try to scratch for seeds in their long fluffy tails!

The birds in the garden, too, lost all fear of Nicky and Clootie, and when the cats were out on the lawn would fly down and pick up crumbs right under their noses. Another cat once made friends with a tame pigeon, and the strange pair were often to be seen about in the garden together, the pigeon strutting beside the cat or lying down comfortably by her side.

Clever cats often find out things for themselves without being taught. We once had a fine, smooth-haired tomcat who discovered how to open the dining-room door. If he was not already in the room at mealtime, the door would suddenly swing open, and Master Tom, with tail erect, would come running in to demand the titbit he always expected from his master. At first we supposed that someone in the house opened the door for the cat. But everyone said, "No, I did not let Tom in." So Tom was watched. And he was seen to trot up to the door, stand on his hind legs, clasp the handle with his two paws, and wriggle it until it turned.

Although cats do not like water and detest being washed, they are the cleanest of animals, and most particular about their toilets. A well-cared-for cat will spend half her time grooming herself, patiently licking her fur over and over again with her rough pink tongue—which makes an excellent clothes brush. If her coat is not sleek and glossy



The name of this lordly prize winner is "Triumph of Runnymede."



This is a long-haired silver-gray striped pussy, with a forbidding pedigree.



Photos by Sports & General Press

A woman picked up this handsome silver-gray cat when she found him lost on a London street. Since then he has rewarded her kindness by winning twelve first prizes!

MISTRESS PUSS AND HER WINNING WAYS

you may be sure your cat is not well. A mother cat is extremely fussy about her kittens, too. She washes the little things several times a day one after another, holding them firmly down with her paw, no matter how they kick and struggle, while she licks them all over from nose to tail! Kittens, like most other babies, are not very fond of being washed. They prefer to play. They are the prettiest, most delightful creatures, always frisking and whisking about, chasing leaves or scraps of paper and rolling over and over together until they are tired out and fall asleep curled up in a bunch.

Kittens, like all young things, have a lot to learn as soon as they are old enough to sit up and take notice. Mother Puss herself undertakes the greater part of their education. She teaches her children good manners, and how to catch mice and things like that; but there are still many things which they have to puzzle out for themselves.

One of the funniest of sights is a kitten's behavior when it first makes acquaintance with its own reflection in a mirror. It will prance gaily up to the glass, eager to play with the

pretty little stranger it imagines is running to meet it. Then it starts back in surprise at finding itself greeted in the most unfriendly manner by a hard bump on the nose!

Kitty sits down to think about this. Presently she puts out a cautious paw and makes little dabs at the reflection—growing more and more puzzled as she finds that her friendly advances are always checked in some mysterious way.

This is really most annoying. Kitty grows cross. She tries once more to bounce through the mirror to reach the provoking

little image, which looks so soft and fluffy, yet feels so unpleasantly hard. Then, struck by a bright idea, kitty makes a sudden dash round behind the glass—only to find, of course, that there is no fluffy little stranger hiding there.

Kitty will probably make several attempts to come to grips with her own reflection before she abandons the experiment. But at last she seems to realize that it is of no use trying to play with the kitten in the looking-glass, and trots away to find a real playfellow.

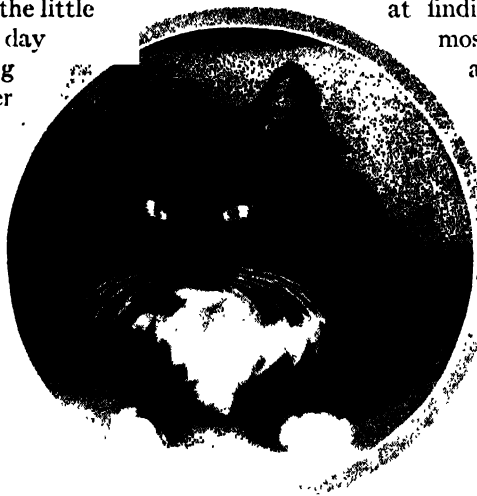


Photo by Remenyi Smith

This fine black Persian has a glint in his eye that reminds us of his jungle cousins.



Photo courtesy of Doris Bryant

Siamese cats, first bred in the palaces of the kings and nobles of Siam, are said to be the most intelligent and affectionate of all breeds. Their chief beauty lies in their shapely build and striking coloring. The coat is an exquisite cream or fawn with soft chocolate markings on ears, nose, feet, and tail. Siamese cats are used to heat and are delicate in cool climates.

Kitty has learned her lesson.

The ancient Egyptians, so far as we know,

MISTRESS PUSS AND HER WINNING WAYS

were the first people to keep tame cats, for there are records of the existence of these pets in Egypt over three thousand years ago. The Egyptian cats, who were the descendants of a race of African wild cats, were regarded as sacred animals, and were always treated with the greatest respect by their owners. If a fire broke out in a house, the safety of their precious cats was the first thing the people thought of; and anyone who harmed a cat was severely punished. Mummies of cats, all bound about with costly wrappings and covered with sacred writings, have often been discovered in old Egyptian tombs. For when a cat died it was buried with great ceremony and the members of the family to which it belonged shaved off their eyebrows as a sign of mourning.

Most European cats are believed to be the descendants of these sacred Egyptian cats, which were very much like our ordinary gray striped tabbies. From Europe the cats found their way to England, brought over, it is said, by the Romans. And as time went on they were carried in ships over the sea to new countries, where they made themselves so useful in catching mice and rats that they were always warmly welcomed. So to-day descendants of the sacred Egyptian cats are distributed over almost all parts of the world.

Many of

the early settlers in North America brought their pet cats with them from their old homes. But before that time native cats are said to have already been tamed by some of the Southern Indian tribes; so it is not unlikely that some American pussies to-day have relatives in both the Old and New Worlds. Cats from other countries have, from time to time, been introduced into America, and now there are so many different types that we do not know positively the family history of them all.

Aristocrats among Cats

There are short-haired cats and long-haired cats; black cats, white cats, sandy cats, tabbies and tortoise-shells, and others which are a mixture of two or three varieties. Short-haired cats are the most hardy and the best mousers, while long-haired cats, or "Persians"—not "Angoras," as they are often called—are more aristocratic.

Persian cats, with their long, silky coats, big ruffs, and huge fluffy tails, make delightful pets, although they are sometimes rather delicate. The

white Persian, with its snowy coat and its turquoise blue eyes, is a lovely creature, but unfortunately it is usually deaf, or at least

hard of hearing; so it is not an easy cat to make friends with. Black, blue, and striped Persian cats are not troubled in this way. Their eyes should be orange or amber in color.

Two curious and rather rare cats are the Manx cat and the Siamese cat. The



Photo by Ollivier, Paris

MISTRESS PUSS AND HER WINNING WAYS

Manx cat is a native of the Isle of Man—a small island in the Irish Sea off the northwest coast of England. The strange thing about this cat is that it has no tail, while its hind legs are so much longer than its forelegs that it seems to hop, skip, and jump along, very much as a hare does.

The Strange Siamese Cat

The Siamese cat is a "royal" animal, accustomed in its native land to a pampered life in the courts of the king of Siam. But the Siamese cat is not at all proud. It is a friendly and interesting little animal, more like a dog than a cat in its ways. It will follow its master or mistress all over the house, and would be pleased to go for a walk with its friends if it were allowed to.

The appearance of the Siamese cat is quite as odd as its ways. Its coat, which is very short and somewhat woolly, is a pale fawn or cream color, while its face, legs, and tail are a dark chocolate brown. Its eyes are pale blue, and, to complete the picture, its long, thin, tapering tail usually has a decided kink, or a small knot, in it.

But the most curious cat of all is the Mexican hairless cat, which has a smooth mouse-colored skin that is entirely bare, except in the winter, when a light fur appears on the back and along the ridge of the thin, bony tail. This peculiar animal lives only with an old Indian tribe in New Mexico, and is found nowhere else. It is now so rare that it will soon become extinct.

Our Common Cat

Our common cat, with its short sleek coat, sturdy health, and companionable ways, cannot be divided into distinct species like those we have just mentioned, for as we have said, it is a mixture of cats from many lands. But fanciers have established certain distinct varieties, or strains, based entirely on the color of the animal's coat. One of the most admired is the tortoise-shell, a handsome creature with orange—or perhaps hazel—eyes and a coat made up of good-sized patches of orange, yellow, and black. The colors should be bright and should not shade into one another. Tortoise-shell males are very

rare, for the male offspring are always striped. The tortoiseshell-and-white cat, which has white on its face, head, breast, and legs, is treated as a separate breed. Tortoise-shell cats should never be striped.

Quite as popular as the tortoise-shells are the tabbies, cats whose coats are striped in contrasting tones. They are classified according to the color of the ground, and are known as silver, orange—or red—and brown tabbies. Rarely a tabby is spotted instead of striped, but the spots follow the outline of the stripes. Brown tabbies—the well-known "tiger cats"—are a rich orange-brown striped with black. Orange tabbies are striped with red, and silver tabbies with darker gray. The silvers tend to produce offspring the color of smoke. All the tabbies should have orange eyes, though often their eyes are yellow, or even green. It is interesting to know that tabbies take their name from an old-fashioned watered silk that was known as "tabby."

The Comfortable White Pussy

One of the most homelike of the short-haired cats is pure white. She is hardly adapted to life in the city, where her good little tongue is unequal to coping with the grime and dirt, but in the country she is a great favorite. There should be no colored hair in her coat, and her eyes should be a deep blue. Occasionally these cats have one blue and one yellow eye.

One of our most romantic pussies is the black cat, long a character in story and legend. Its jet-black coat should be free from white, and its eyes a bright orange. Unlike its white cousin it makes an ideal city dweller.

Equally handsome and a good deal commoner is the blue, or Maltese, cat—which has nothing to do with the island of Malta. In color it is a bright grayish blue, with orange eyes. Occasionally one sees a cream or orange cat of almost solid color, but it is sure to have some slight marking. Of course mixtures of all the varieties we have mentioned are very common, especially when the added color is white, but it is only to animals that run true to type that prizes are given in cat shows.



DOMESTICATED ANIMALS

Reading Unit No. 22

OUR FRIEND THE DOG

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

Stories of intelligence among dogs, 4-492-94
How people first tamed wild dogs, 4-494-96
The probable ancestors of our dogs, 4-494-96

How Eskimos use dogs, 4-498-500
The work done by dogs, 4-500-3
The six different types of dogs, 4-503

Things to Think About

Some people say dogs cannot reason. What do you think?
How many kinds of dogs are there to-day?
Why do some dogs turn round and round before going to

sleep?
What do Eskimo dogs do for their masters?
What are the six main types of dog?
Are mongrels worth keeping?

Picture Hunt

What kind of dog keeps reindeer herds together? 4-492
How did bulldogs get their name? 4-493
What kind of dog was used most in World War I? 4-494
What may have been the origin of

the Boston terrier? 4-495
For what kind of work are collies well fitted? 4-498
What dog is most famous for its sense of smell? 4-499
What kinds of dogs are built for speed in running? 4-490

Related Material

Name the wild cousins of the dog, 4-299-309

How are dogs used in Belgium? 6-346

Leisure-time Activities

PROJECT NO. 1: If you have a dog, you can make him a fine kennel or improve his present one, 14-42
PROJECT NO. 2: At the first chance, visit a dog show and be-

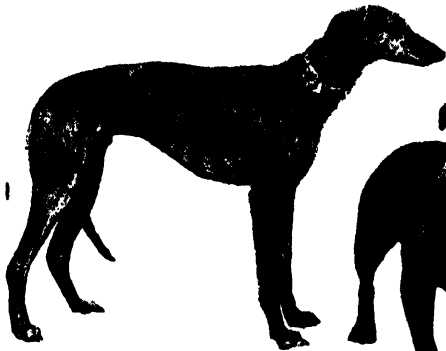
come acquainted with the many different types of dogs.
PROJECT NO. 3: Keep a diary of the intelligent things your dog does.

Summary Statement

In many places dogs are used as workers. Eskimo dogs are the horses of the Arctic. In Belgium

dogs deliver milk. In some places they herd sheep, cattle, and reindeer. Others help hunters.

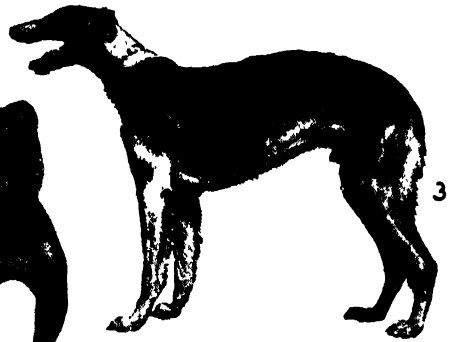
OUR FRIEND THE DOG



1. Greyhound. Every line and muscle of this tall, slender hound is built for speed in running.



2, 7. Bulldogs. Bull baiting was forbidden by law in England in 1835 and was never practiced in America. For a time after that bulldogs were considered a low and vulgar breed. But now they have become quite aristocratic and are bred with great care.



3. An Italian strain of the Russian wolfhound, or borzoi. Wolfhounds are bred for grace and speed.



4. Saluki, or gazelle hound—an Arabian dog of the greyhound type, possibly the oldest pure breed in the world.



5. Scotch borzoi—another of the wolfhounds derived from the Russian breed.



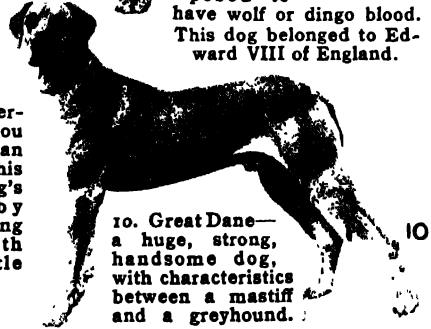
6. Afghan hound—a strange-looking breed from the Far East.



9. St. Bernard. You can get an idea of this great dog's size by comparing him with the little girl!



8. Alsatian—a very popular modern breed supposed to have wolf or dingo blood. This dog belonged to Edward VIII of England.



10. Great Dane—a huge, strong, handsome dog, with characteristics between a mastiff and a greyhound.

OUR FRIEND THE DOG



Few people can resist a puppy. Its effusive, blundering manners endear it to nearly every human heart. And if in its youthful enthusiasm it is a bit hard on

the furniture, its indulgent owners console themselves with the thought that by its staunch affection it will more than pay its way in years to come.

OUR FRIEND *the* DOG

*This Will Tell You All about the Honest Fellow Who Will Loyal-ly
Share Your Misfortunes and Will Lay Down His Life
for You if Need Be*

SOME time ago hundreds of dogs of all sorts, sizes, and descriptions met together at a dog show. There were great Danes and mastiffs nearly as big as donkeys, and tiny dogs so small that you could pick them up and put them in your pocket. There were smooth dogs and rough dogs; silky-haired spaniels with big gentle eyes; good-tempered old sheep dogs with shaggy coats and funny little bob tails; graceful greyhounds with long, slender legs and long, pointed noses; and important little Pekinese with very short legs and no noses at all to speak of. There were bulldogs looking alarmingly fierce, although they are really most good-tempered as a rule; there were queer-looking dachshunds with long, low,

sausage-shaped bodies and bandy legs; and there were many other breeds, all interesting in one way or another. But the most interesting part of the whole show was the "Hall of Brave Dogs," where a select party of canine heroes were holding a reception.

Among the most admired in this famous company was the Queen of Sheba, a dignified bloodhound with perfect manners, who had won renown by finding a little girl who was lost in a forest. The dog had found the terrified child after the parents had given up all hope of seeing her again. Then there was Sammy, a splendid black retriever who had saved his mistress's life by dragging her from her bed, which had caught fire. The poor woman was so dazed by the smoke that she

OUR FRIEND THE DOG

could not move, and would certainly have been burned to death if Sammy had not come to her rescue.

Next to Sammy was Jim, a fine black and tan collie who flew at a fierce bull that had attacked his master; he succeeded in driving the savage beast away.

Ruby to the Rescue!

Not far away Ruby, a smart little fox terrier, was acknowledging the attentions of admiring visitors with her quivering stump of a tail. This clever little dog, when out for a walk by herself one day, saw a man who had met with an accident lying all alone in a meadow. At once she trotted up to him to inquire what was the matter and see if there was anything she could do. Then, finding that the man was unable to move, she sped off as fast as her legs would carry her to fetch help. As she was running along the road Ruby met a doctor who happened to be a friend of hers. She rushed up to him, barked excitedly, tugged at his coat, and told him as plainly as she could that he was wanted. And the doctor, being a sensible man, followed the little dog, who led him straight to the injured man.

Now of course Ruby did not know that her friend was a doctor. That he should have been one was just

a lucky chance. But she certainly helped the poor man in the very best way she could by so promptly fetching someone to his assistance.

There were several dogs in the hall who had rescued people from drowning, or who had proved their courage and their love for their human friends in some other splendid way. And of course there are any number of brave dogs that were *not* in the hall that day, but who might very well have been there.

Of course dogs are not all alike. There are dull dogs and bad-tempered, snarling dogs, as well as brave, gentle, and clever ones. But a dog's character depends to a great degree on the way in which he is treated. If you make a friend of your dog, if you talk to him and always treat him kindly and justly, he will be a devoted and intelligent companion. But a dog whom no one ever speaks to except to say "Lie down"

or "Come here, sir" in a harsh tone of voice, and one who is beaten and scolded for every little fault, is certain to be stupid and surly.

Dogs are the most understanding of all our four-footed friends; and many stories are told of especially clever ones. These stories seem to prove that the dogs often think and reason in an almost human way. One of the best, perhaps,

These beautiful white dogs are of the Samoyed (sām'ô-yéd') breed, one of the gentlest and most intelligent of all the dog kind, and certainly one of the handsomest. They are closely related to the Eskimos' husky, and are used in Northern Siberia to herd reindeer and draw sledges. Both the Samoyed and the husky have worked valiantly for polar explorers; but whereas the husky is still somewhat savage, the Samoyed is exceedingly friendly. It is a breed that deserves to be better known.

Photo by Sports & General Press



OUR FRIEND THE DOG

1. Irish terrier. All terriers are active, hardy, alert little creatures, and none more than the Irish breed.



2. Bulldog. These dogs, though tenderly affectionate, can be ferocious if the occasion demands. They were once used to bait bulls in the old "sport" of bull baiting. It was in this way that they got their name.



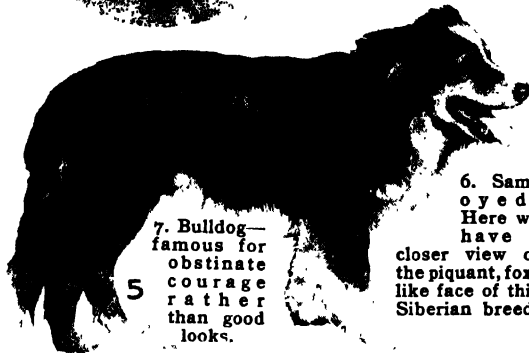
3. Pekinese—a tiny Chinese lapdog that has become very fashionable of late.



5. English shepherd. This dog is much more like a collie than like the bob-tailed dog called an "old English sheep dog." As a matter of fact, many sorts of dogs have been used as "shepherds' dogs," or tenders of sheep.



4. Airedale terrier. The Airedales are strong, rough-haired dogs, largest of the terrier kind.



7. Bulldog—famous for obstinate courage rather than good looks.

6. Samoyed. Here we have a closer view of the piquant, fox-like face of this Siberian breed.



8. Basset hounds—a French breed with very short legs.



OUR FRIEND THE DOG

is a true tale of two little fox terriers who lived opposite a big London hospital. These dogs were used to seeing injured people taken to the hospital, and although they never went inside themselves, they seem to have grasped what that big building was for.

Now one day when the two dogs were playing in the street they saw a collie in great pain and distress. One of his paws had been run over and badly hurt, and the poor dog, with piteous howls, was trying to limp off on three legs. The two little terriers at once ran up to the injured collie and in some way of their own they persuaded him to accompany them to the hospital. There they barked and barked until the door was opened and they and their patient were let in. And there the two wise little dogs waited until a kind-hearted doctor bound up the collie's bleeding paw.

An artist who heard this story painted a picture of the three dogs waiting at the door. And to-day it hangs in one of the rooms in the hospital, so that the good deed of the two kind little terriers shall not be forgotten.

How Nip Made Sure of His Supper

Another true and very funny story is told of a small dog named Nip, who certainly thought things out for himself and acted accordingly. Nip was a great pet with his master's children, and every night he slept with one or another of them, but until bedtime came he never knew which one it was to be.

One evening the children were taken to some entertainment, and their supper—

little meat pies and little cakes—was left all ready for them on the nursery table. But when the children came home, the table, like Mother Hubbard's cupboard, was bare; not a pie, not a cake was there, and nowhere could they be found. Not until the children were all tucked in bed was the mystery solved. Then every child found a

pie and a cake under the quilt of its little bed, where Nip, to make sure of his own supper, had thoughtfully hidden them!

When it was that the dog first became the friend and companion of man, we cannot tell exactly. But we do know that in the days before history began, many of the wild, wandering tribes who lived in tents or caves, tamed and trained fierce, wolflike animals to help them hunt the wild beasts.

When the men and their dogs came back from hunting, the dogs were given bones and scraps to reward them for their services; and then they would lie by the camp

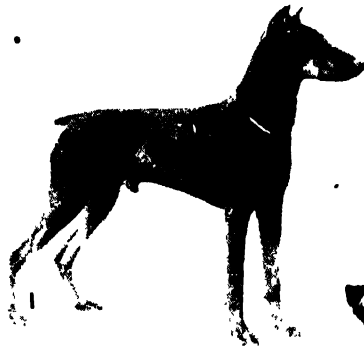
fire ready to spring up and drive away the wolves and other wild animals that were always prowling about.

Those wild, savage dogs, who were little more than tame wolves themselves, are believed to have been the ancestors of most of the tame dogs we know to-day. Many dogs are still very wolflike, especially the native dogs of North America. Travelers in the Arctic have on more than one occasion mistaken the half-wild Eskimo dogs for savage wolves. The wolf-dog of Florida is almost exactly like a black wolf; and the Hare Indian dog that is trained for hunting by the Hare Indians of Great Bear Lake and



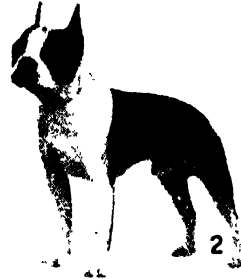
This is the noble head of a German police dog. Though the breed is well loved as household pets, it came honestly by its name, for police dogs are really very valuable and intelligent helpers in certain European police departments. They did valiant service during World War I.

OUR FRIEND THE DOG



1. This alert fellow is known as a Pontchartrain, an uncommon breed.

2. Boston terrier. This breed is a native of Boston, as its name implies; it is supposed to be part terrier and part bulldog. It stands fourteen to eighteen inches high.

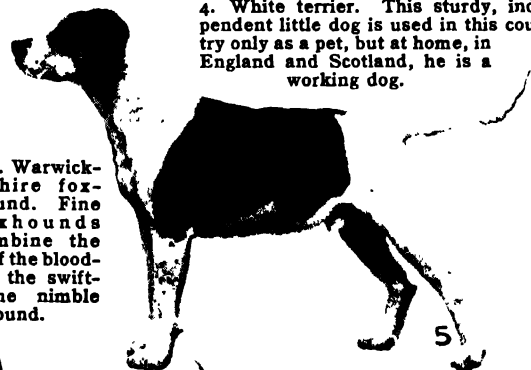


4. White terrier. This sturdy, independent little dog is used in this country only as a pet, but at home, in England and Scotland, he is a working dog.



3. Pomeranian. This is a toy dog, weighing under five pounds. It is wolflike in appearance—a sort of pocket edition of its fierce wolf ancestor. It is fashionable as a lapdog.

5. Warwickshire foxhound. Fine foxhounds combine the keen scent of the bloodhound with the swiftness of the nimble greyhound.



6. French bulldogs. These prize dogs, strong and sturdily built, like all their kind, look rather bored at being exhibited thus tricked out!

OUR FRIEND THE DOG

the Mackenzie River, howls like a coyote.

In Southern Europe, Asia, and Africa many tame dogs are somewhat like jackals, to whom there is little doubt that they are closely related. So both wolves and jackals, in all probability, have played their part in the ancestry of many of our dog friends.

Now as the centuries passed and man slowly grew up from his wild state and became civilized, his dogs became civilized too. The gaunt, savage animals who went hunting with the cave men in the Stone Age gradually altered as the years rolled on—some in one way, some in another, according to the life they led and the purposes for which they were

kept. Some dogs were trained for hunting, others as guardians of their masters' flocks or property. Others again were taught to draw sleighs, or to work in all sorts of different ways, while some dogs were bred for sport or as household pets.

So the dog grew more and more valuable to man, shared his work, his pleasure, and his home, and became his most faithful friend and servant. As a result there are to-day nearly two hundred different kinds of dogs, all of them descended directly or indirectly from the wolves and jackals tamed by man

to be his friend so many, many years ago.

Both man and his dog have traveled far since those early days in the world's history. Yet the dog still retains some of the old instincts of its wild ancestors. All dogs are born hunters. They can be trained, of course, not to hunt and kill other creatures, but every dog, even the smallest pet dog,

wants to chase everything it sees running away. Cat, rat, rabbit, chicken, sheep, or deer, no matter what it is, the moment it starts running, the dog is wild to chase it!

Then, as you may have noticed, a dog nearly always turns round several times before he lies down for a nap. When he does this he is unconsciously imitating his forefathers, who

were in the habit of trampling down the tangled grasses in the jungles to make themselves a comfortable bed. Dogs often howl on moonlight nights, just as their ancestors, the wolves, howled at night to call the hunting pack. And even the most well-cared-for dog, who has never known what it is to go hungry, will often bury his bone or hide it in some strange place, although there is not the slightest

fear that it may be stolen from him by any prowling beast—a tragedy that often happened to his long-forgotten wild relatives.



Photo by N. P. Railway

A strange sort of friendship we have here—little bear cubs sniffing about a beautiful Alaskan husky!

These cocker spaniel pups will grow up to be small, docile dogs with long, fringed ears and silky coats such as all spaniels have. The cockers in particular are often trained to start game birds in woods or marshes.

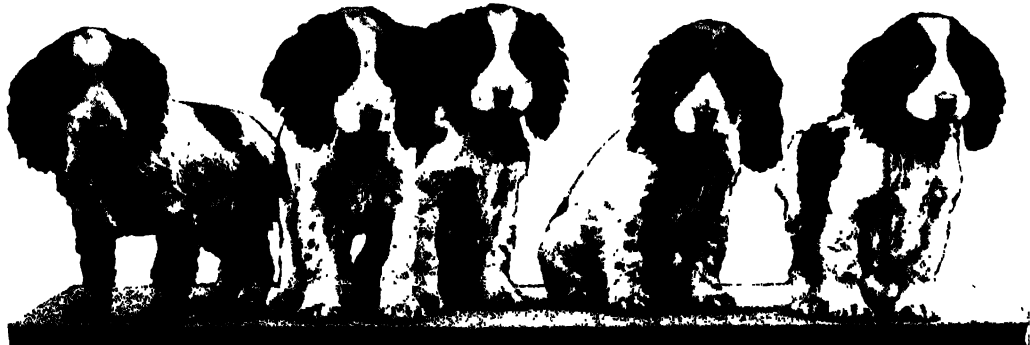
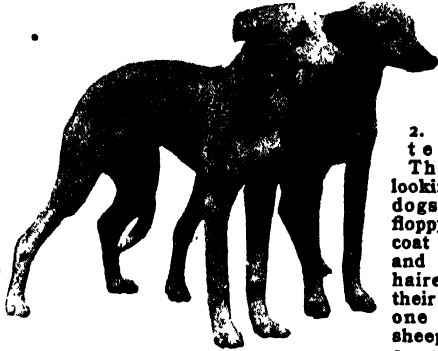
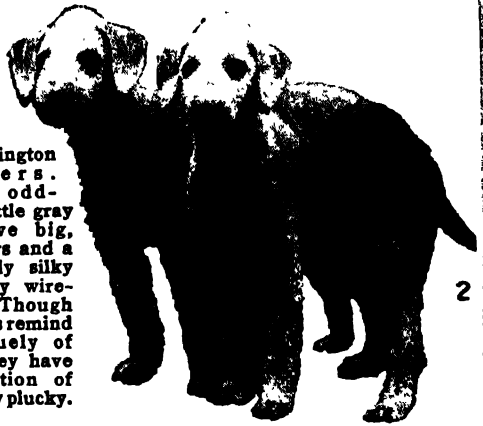


Photo by Sports & General Press

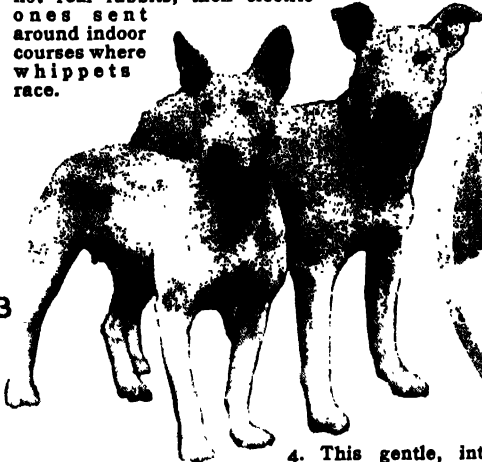
OUR FRIEND THE DOG



1. A brace of whippets. These graceful dogs are a small breed of greyhound developed to chase rabbits—if not real rabbits, then electric ones sent around indoor courses where whippets race.



2. Bedlington terriers. These odd-looking little gray dogs have big, floppy ears and a coat partly silky and partly wire-haired. Though their faces remind one vaguely of sheep, they have a reputation of being very plucky.

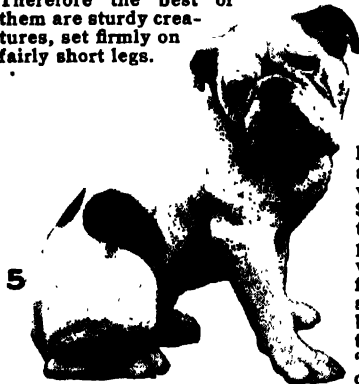


3. Bull terriers. As we might guess from their name these terriers were bred for bull baiting. Therefore the best of them are sturdy creatures, set firmly on fairly short legs.



4. This gentle, intelligent face of an English setter is an artist's portrait of a well-loved companion of the hunt.

6. Old English sheep dog —perhaps not so "old" after all, at least in just this form, with bobtail and tousled hair.



5. Bulldog. This particular dog is said to be worth \$5,000. Notice the broad powerful jaw which in the old fighting days served the breed in getting the famous "bulldog grip" on an enemy.



OUR FRIEND THE DOG



To many people even to-day there is no sound more thrilling than the hunting horn at dawn or the deep baying of the hounds as they pick up the scent. Above

we have a typical English hunting scene, with trim riders, mettlesome horses, and the pack of alert hounds. Everything is here but the unlucky fox.

One important way in which most tame dogs are distinguished from the wild hunting dogs of Asia and Africa is their habit of barking. True wild dogs howl, they never bark. Barking is an acquired accomplishment which marks the domesticated animal, though almost all dogs, even the most well-bred, howl at times—for instance, when they are miserable or in pain.

The wolflike dogs of America seldom bark. The Eskimo dogs cannot bark at all. These "huskies," as they are called in Alaska, are half-wild savage animals. They howl and yelp, and if they are allowed to run loose are almost certain to start fighting one another, while sometimes one of the dogs will even go back to the wild and join a pack of wolves.



What dog has a more noble bearing than our old friend the collie? He was developed as a Scotch sheep dog, with pointed nose and ears and a long, thick coat beautifully marked in various combinations of black, white, tan, and tawny red.

But to the people who live up in the desolate Arctic huskies are most valuable animals. They are strong and sturdy and can drag heavy loads for miles over rough tracks covered with ice and snow.

The Eskimos, who live by trapping seals and hunting the musk ox and reindeer, keep teams of huskies to bring home the fresh meat, which they often have to go long distances to get. Eight or ten dogs are usually harnessed to a sleigh, but when the loads are very heavy or the going is unusually bad, there may be eighteen or twenty dogs in a team. The biggest and strongest dog is always leader, and he wins this proud position by fighting all the other huskies in his team until he has mastered them and firmly established himself as "top dog." The leader keeps his

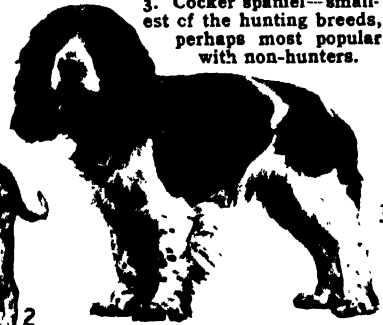
OUR FRIEND THE DOG



1. Samoyed. Happily these beautiful arctic dogs are now bred also in warmer climates.

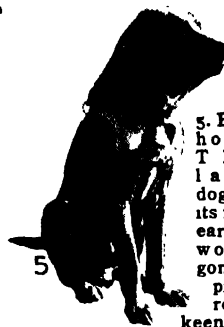


2. Dalmatian—a spotted hound, named from his native land.



3. Cocker spaniel—smallest of the hunting breeds, perhaps most popular with non-hunters.

4. Shetland sheep dog. Just as the Shetland pony is a small pony, so the Shetland sheep dog is a small sheep dog—a miniature collie.



5. Bloodhound. This large dog, with its floppy ears and woebegone expression, has remarkably keen scent.



6. Poodle. The great blanket of hair is all the dog's own. This coat is often clipped and trimmed till the little creature looks like a toy lion.

7. Scottish terrier. "Scottie" is an amusing, impudent little fellow. Notice how big and shaggy are his head and the forepart of his body.

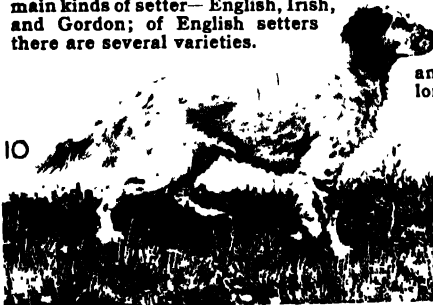


8. Irish water spaniel—a dark red spaniel with tousled coat and a topknot of long loose curls.

9. Wire-haired fox terrier—an old and still popular breed.



10. English setter. There are three main kinds of setter—English, Irish, and Gordon; of English setters there are several varieties.

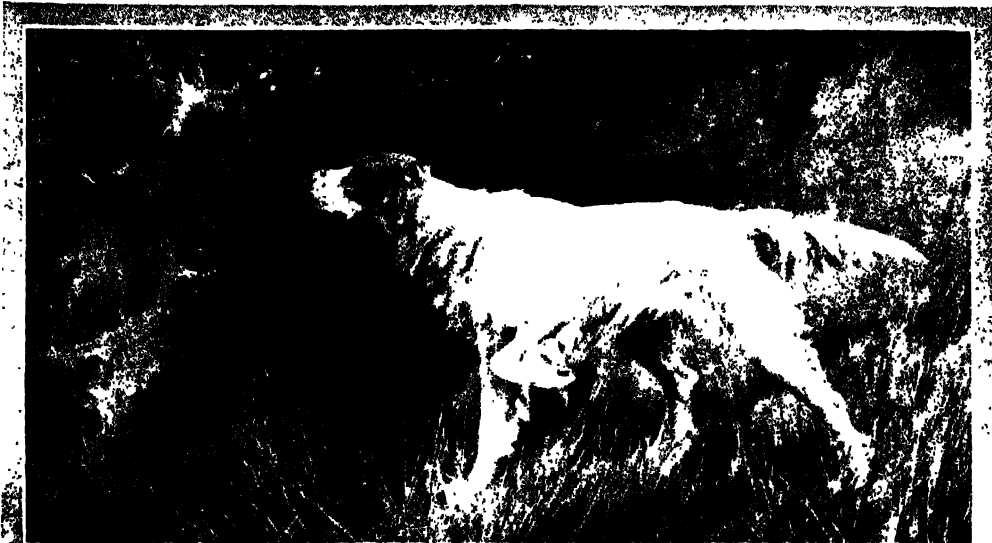


11. Irish setter—the most impulsive of the setter kind.



Photos by Sports & General Press, and Ollivier

OUR FRIEND THE DOG



Handsome setters like these have tempted many an artist to paint them. The dark one is an Irish setter, colored mahogany red. The light one is an English setter—a breed which may be either black and white,

or black, white, and tan. Setters got their name from a habit they used to have of "setting," or crouching, when they had picked up a scent in hunting. They do not crouch now, but stand as shown here, "pointing."

followers up to their work, and if he suspects that one of them is not pulling his weight fairly, he calls him to order with angry snarls and sometimes punishes the slacker with a sharp nip.

On all Arctic expeditions these Eskimo dogs have proved invaluable. They can stand the most intense cold, and can live on scanty rations of dried fish washed down with gulps of snow; and a good team can easily draw a load weighing 360 pounds a distance of forty miles in a day—that is,

when the snow over which they travel is hard and smooth.

In Belgium and Holland big, strong dogs are often employed to draw barrows, or little carts, carrying milk or vegetables; and in almost all parts of the world you will find some of these useful four-footed friends of ours working for their living in one way or another. They play the part of house dogs, police dogs, farmyard dogs, sheep dogs, making themselves useful in all sorts of ways; and they almost always take the greatest pride and interest in their work.

These pointers get their name from the fact that they really do point—standing with their long, slender noses turned in the direction of the game until the hunter arrives.

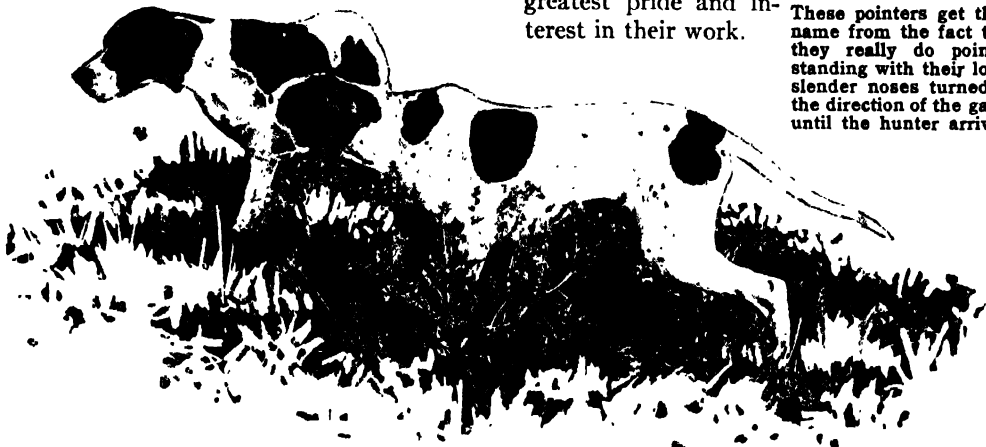


Photo by Sports & General Press

OUR FRIEND THE DOG



Photo by N. P. Railway

A team of Eskimo dogs, or huskies, will travel swiftly over the arctic snows; and at night the dogs will gather

in a ring near the camp fire and howl woefully at the moon, like their wolfish ancestors.

Of course some dogs are more intelligent and more easily trained than others, and certain kinds of dogs are best for certain kinds of work. The Scotch collie—a handsome fellow with a long pointed muzzle, silky coat, fine ruff, and feathery tail—and the bob-tailed sheep dog, who looks like a small shaggy bear, are the best of all sheep dogs. They are carefully trained by the shepherds, who would be lost without their trusty four-footed companions to help them tend their flocks. A good dog can be left all by himself in charge of the flock, for nothing will induce him to leave the sheep while he is on duty. He watches them all intently, and if one of his charges strays too far, he is after it in an instant. He will head the straggler off, bark at it, and drive it back to the flock again; but a good sheep dog never bites the sheep or harms them in any way.

When the sheep are scattered over the

hillsides or pastures to feed on the short sweet turf, the shepherd's dog will round them up at sundown and drive them to the fold. He knows every one of his master's sheep, and if one is missing and the shepherd takes him to find it, away the faithful dog will go, searching up hill and down dale until he has found the wanderer and brought it safely home.



Photo by Sports & General Press

Here is a basketful of pugs, looking as pert and absurdly ugly as miniature bulldogs. They will never grow very big, nor will they aspire to be anything but petted idlers. The name "pug" means "little imp," and was given to the little rascals in affectionate amusement. The breed once was highly fashionable but now is rarely seen.

covered with snow or the storm is blinding.

It is by their keen sense of scent that hounds follow the trail of the wily fox, and that bloodhounds, in the bad old days, tracked down runaway slaves and escaped prisoners. By their noses, too, the noble St. Bernard dogs helped the good monks of St. Bernard to save the life of many a

Dogs are able to hunt either by sight or by scent. They have wonderful noses, and once the shepherd's dog picks up the scent of the sheep he is seeking, he is sure to find it no matter how far it has strayed. He does not hesitate even when the ground is

OUR FRIEND THE DOG



Photo by Anderson

No painter of animals has ever been better loved than is Sir Edwin Landseer. Very early in life he began his career; in fact, when he was still under five he could draw pretty well and already understood animals, and when he was thirteen he had two pictures accepted for the exhibition of the Royal Academy, in

London. The painting shown above is one of his most famous and popular pictures. It is called "Dignity and Impudence," and illustrates Landseer's delight in humor. As time went on he grew more and more fond of putting sentiment—or even sentimentality—into his paintings, but his workmanship declined.

traveler who lost his way on the snow-covered Alps. The monks, who lived in a monastery at the foot of the mountains, kept several of these splendid dogs, who were specially trained for rescue work.

Every morning when the weather was bad two or three of the dogs were sent out on

their errand of mercy—sometimes with a party of monks, sometimes alone. With their noses to the ground the dogs would hunt about until they picked up the scent of a stranger. Then away they would bound through the snowdrifts in search of the lost man. When they found him the dogs would

OUR FRIEND THE DOG

guide the traveler back to the right path; or if he were too frozen and exhausted to follow them, they would fetch the good monks to his aid.

One of these noble dogs named Barry lived for twelve years with the monks and saved the lives of over forty lost travelers before he himself perished in a snowstorm on the mountains. A monument erected in his honor stands in the Dogs' Cemetery in Paris.

Valiant Helpers in the World Wars

The St. Bernards are not the only dogs who have saved men's lives or helped them in time of danger. In World War I more than ten thousand dogs served with the armies—not to fight, but to serve the soldiers in many better ways. A whole regiment of smart little terriers did their bit as rat catchers in the trenches; other steady, trusty fellows were employed to carry cans of hot soup to men who could not leave their posts; swift runners were sent out with dispatches over dangerous ground where no man could venture. But best of all were the devoted dogs who were trained to serve under the Red Cross. It was their duty to search for wounded soldiers who were lying helpless in out-of-the-way places and guide the ambulance men to the spot. Right nobly these brave dogs did their work. One named Filax, a fine sheep dog who deserves special mention, is said to have saved the lives of nearly a hundred wounded soldiers. During World War II many brave dogs—called the K-o's!—served on sentinel duty.

There are six different types of domestic dogs: First are the wolflike dogs, a group which, besides the Eskimo dogs and other wolflike dogs of America, include collies and sheep dogs, the Chinese chowchows, Pomeranian dogs, and their small cousins the tiny "Poms" and the funny little schipperke (skîp'êr-kê), which has no tail and was at one time employed as a watchdog on barges in the Belgian canals.

Next come the greyhounds. This group includes greyhounds of many countries, as well as the Irish wolfhound, the Russian wolfhound, or borzoi, and the curious hairless

dogs of China, South America, and Mexico.

In the third group are the spaniels—sporting dogs of many kinds, distinguished by their broad heads, and big floppy ears. Newfoundland dogs and setters belong to the spaniel group, as do the cunning little Pekinese—the "lion-dog" of China.

The fourth group contains the hounds—foxhounds, otterhounds, staghounds, beagles, and other hunting dogs, including the German dachshund, or badger dog, and the Dalmatian, which is sometimes called the "plum-pudding dog" because its white coat is dotted with many large black spots.

The mastiffs make up the fifth group. This type includes the largest domestic dogs, the mastiffs, great Danes, and St. Bernards, and also the bulldog, who, though no beauty, is one of the best of house dogs and a most faithful lovable fellow. To this group also belongs the small snub-nosed pug.

In the sixth group are the terriers, bright, intelligent dogs, always great favorites. There are a great many different kinds of them—fox terriers, Scotch, Irish, and Airedale terriers, Yorkshires, Skyes, Maltese, Sealyhams, and many others besides. And with them are placed the quaint-looking curly-haired poodles, who are the cleverest of all dogs, quick to learn almost any trick you like to teach them.

What Is a Mongrel?

Then of course there are mongrels—cross-bred dogs whose parents do not both belong to the same type. Mongrels are not so expensive as well-bred dogs, but they are usually very intelligent and very good company.

Lastly there are the pariah (pă'rî-ă) dogs, an outcast race whom nobody owns. They are found in Eastern Europe, Asia, and Africa, where they slink about the streets of towns and villages, picking up a scanty living among the rubbish heaps, snarling and fighting over scraps, and making the night hideous with their howls and yells. It is no use trying to tame these pariah dogs, who are vicious and cowardly animals, quite different in every way from our own well-mannered, friendly dogs.

DOMESTICATED ANIMALS

Reading Unit No. 23

THE HORSE AND HIS STRANGE HISTORY

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

Interesting Facts Explained

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How prehistoric horses walked from North America to Europe and Asia, 4-508
What cave men knew about

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Horses for all kinds of work, 4-513-14
Why Spanish settlers found no horses in America, 4-514

Things to Think About

How big was the ancestor of all our horses?
Why did horses develop into running animals?
How do we know that the horse runs on his "toenails"?
Why were animals once able to

walk from North America to Europe and Asia?
How can we tell that cave men knew horses?
Why did American Indians fear the Spaniards on horseback?

Picture Hunt

What animals walk on one toe? 4-506
What is a mule? 4-506-9
What changes did horses undergo in size and in the formation of their heads and feet? 4-507
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Summary Statement

Horses developed from animals that were only as large as a rabbit. We know this from fossils. The prehistoric horse once walked on three toes, but to-day the horse

walks on one toe. The modern horse's hoof is nothing but a hard toenail! Horses learned to run in order to escape beasts of prey.



Photo by Field Museum

When the bold Spaniards came to the New World, they found no horses on either continent. Yet horses had lived in the Americas for millions of years; in fact the race may have originated here. We find their fossil remains in ancient rocks in both North and South America. Later, in the early part of the Ice Age, they died out altogether and were not seen again in

the New World until the Spaniards brought them over from Europe. The horses above are not the earliest horses we have found in America; they lived many millions of years later than the earliest horses, and had come to be the size of sheep. They had three toes on both fore and hind feet, but the side toes bore very little of the weight.

The HORSE and HIS STRANGE HISTORY

How the Largest of Man's Four-footed Friends Comes to Be Descended from a Little Animal the Size of a Rabbit

LONG, long ago—some fifty million years ago, in fact—a strange little four-footed animal about the size of a jack rabbit was living on the great continent of North America. It had rather short legs, a long head, long body, and a long tail with a hairy tassel at the end. The little creature looked more like a queer little horse than anything else—the kind of horse a very small child might draw. Three toes had this little creature on its hind feet, and it walked about like a tiny bear, placing its feet flat upon the ground with every step it took.

Now this odd little fellow, although at that time there does not appear to have been anything very remarkable about it,

was really a most important little animal. It was the Eohippus (ē'ō-hīp'ūs)—the "dawn horse"—the founder of a race of splendid fleet-footed animals destined in due time to become one of the most important of all man's four-footed friends and servants.

How do we know that such an animal as the Eohippus lived in our land so many ages ago, when no one was there to see? And how do we know that it was the ancestor of the modern horse?

Well, the fossil (fōs'īl) skeletons of the Eohippus and its descendants have been found buried in the different layers of the earth's crust belonging to the different periods of the world's history. From these fossil bones it has been possible to trace the

THE HORSE AND HIS STRANGE HISTORY

gradual development of the little animal throughout the ages—and so the wonderful story of the horse and its ancestors has been made known to us.

The little dawn horses were peaceful little creatures. They appear to have roamed about in herds, and to have lived by cropping

from their enemies. This was a great discovery. And from that time onward we can trace the gradual rise of the horse.

As the years passed and one generation succeeded another, the little animals took more and more to running on the tips of their toes. Slowly, too, they changed in other ways. They grew bigger and taller; their legs grew longer, and their teeth grew stronger. The fourth toe on the forefeet disappeared; and the center toe on all four feet—which bore the whole weight of the animal—grew bigger and stronger. While the side toes, which were hardly used at all, grew smaller and smaller.

All these changes took several ages to accomplish. But at last, after many million years had passed, the won-



Photos by Tucson Sunshine Club, Ollivier, and N. Y. Zoological Society

Here are the only three animals that walk on one toe—the donkey, or ass, the horse, and the zebra. A mule is not a fourth kind of one-toed animal, but a hybrid, or cross, between the horse and the donkey. For ages men have used the donkey for bearing their burdens, though there are still many wild donkeys, too. Men have also long ridden or driven the horse, or put burdens on his back. Only the zebra continues to run wild and free.

the soft juicy herbage growing in marshy places; their teeth were not strong enough to bite anything at all hard or tough.

Of course we do not know everything that happened to the animals that lived in those far off days. But we can make a very good guess that the dawn horses must have spent a great deal of time in running—running for their lives, to escape the fearsome flesh-eating beasts that roamed the land, killing and devouring all creatures weaker than themselves. The dawn horses had no strong teeth or sharp claws to defend themselves with, so they were forced to run—if they did not want to be eaten!

How Horses Ran on Their Toes

Now flat-footed animals are not very swift runners, and after a while these tiny ancestors of the horse found that by rising on their toes they could run faster, and so would have a much better chance of escaping

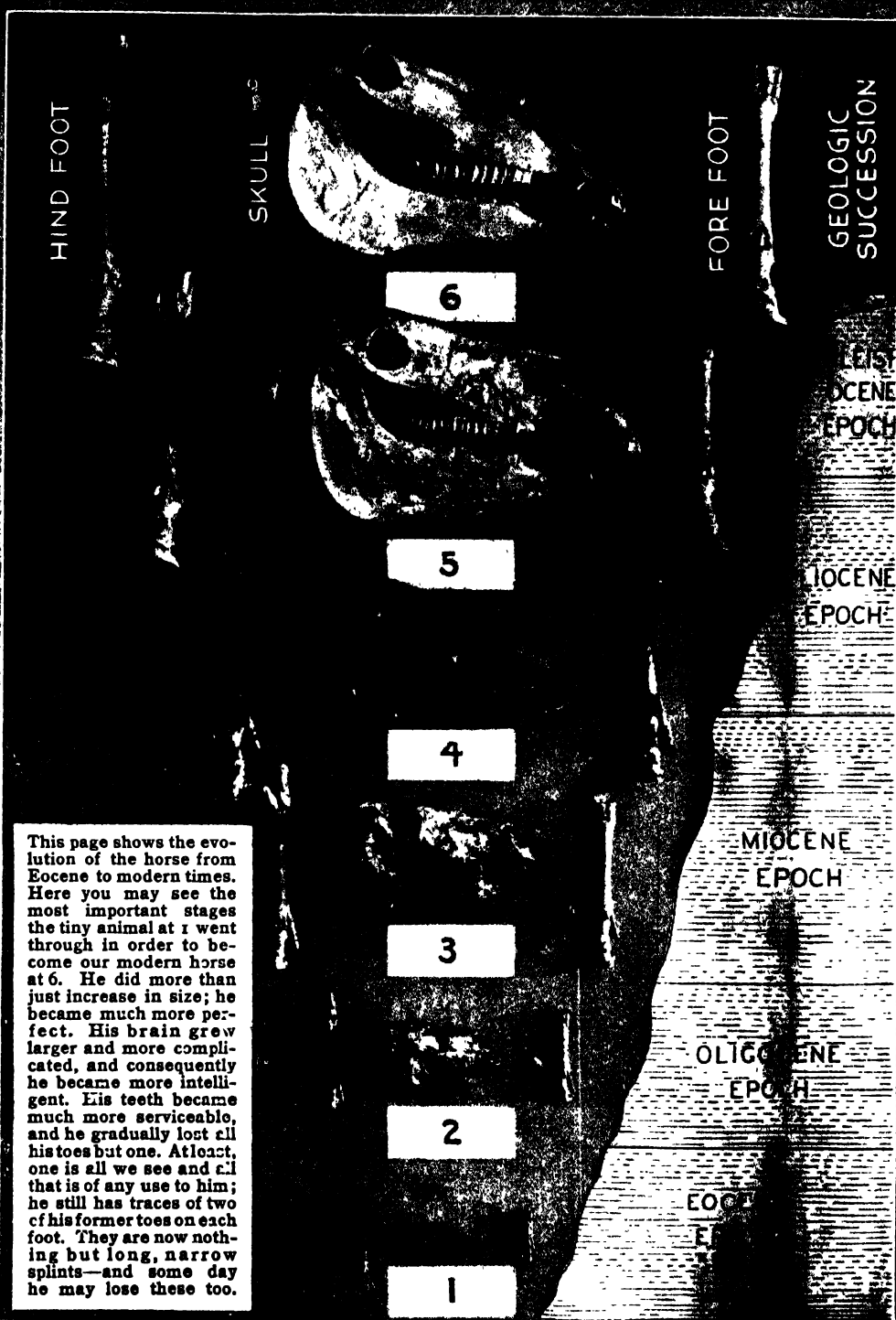
derful transformation was completed—in place of the tiny, flat-footed Eohippus that once padded about in the swamps, the proud and splendid horse sped like the wind over grassy plains and sandy deserts.

The Single Toe of the Modern Horse

The horse has now but a single toe on each foot. But it is a remarkably big, strong toe, incased in a solid, horny hoof—which is actually a very much enlarged and thickened toenail. Two little bones, called "splint bones," one on each side of the long "cannon bone" of the horse's foot, are all that remain of its side toes.

The horse stands and runs on tiptoe, resting its whole weight on its hoof—on the first joint of its single toe. The upper joint of the toe, which is raised from the ground,

THE HORSE AND HIS STRANGE HISTORY



This page shows the evolution of the horse from Eocene to modern times. Here you may see the most important stages the tiny animal at 1 went through in order to become our modern horse at 6. He did more than just increase in size; he became much more perfect. His brain grew larger and more complicated, and consequently he became more intelligent. His teeth became much more serviceable, and he gradually lost all his toes but one. At least, one is all we see and all that is of any use to him; he still has traces of two of his former toes on each foot. They are now nothing but long, narrow splints—and some day he may lose these too.

Photo by American Museum of Natural History

THE HORSE AND HIS STRANGE HISTORY

is called the "pastern"; and the joint between the pastern and the cannon bone of the foot itself is the "fetlock."

The joints of the horse's legs which we usually call its "knees" are really the animal's ankles. Its true knees are much higher up, inclosed in the skin of the body; but you can see the movement of the knees quite plainly when the horse is in action.

Donkeys and zebras, who belong to the horse tribe, are the only other animals that walk on one toe. All the horse tribe are distinguished by having a peculiar horny knob on the inner side of the leg—just above the so-called "knee"—which is known as the "chestnut." A horse has one on all four legs, but donkeys and zebras have chestnuts on their forelegs only. To-day these chestnuts are of no use whatever to domesticated animals, but in former times, when horses ran wild, the chestnuts may possibly have been scent glands giving off a scent by which a member

of the herd who had strayed away could pick up a trail that would lead him back to his comrades.

Now we know that a great many years ago Alaska and Siberia were connected by a

land bridge across the Bering Strait; and animals from North

America were constantly passing over the bridge and wand-

ering into Europe and

Asia. So by the time

genuine horses had de-

veloped, troops of

sturdy animals with

short, stiff upright

manes and shorter

limbs than horses have

to-day, were roaming

wild in the Old World as well

as over almost the whole of

the American continent.

With flying feet and tossing

heads they scoured the des-

erts, plains, and stony

wilds; cropped the rough

herbage and coarse grasses;

drank deep from scattered

pools; and while keeping close

together, were always on

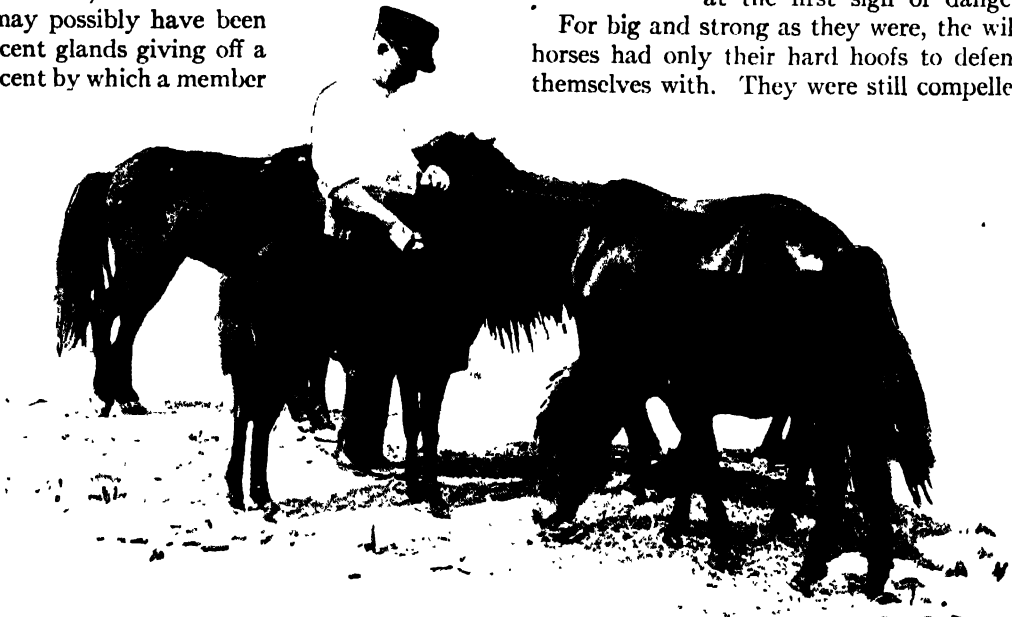
the alert, ready to stampede

at the first sign of danger.

For big and strong as they were, the wild horses had only their hard hoofs to defend themselves with. They were still compelled



In the circle above is the shaggy head of a Norse horse. The Norwegian horses probably came originally from Northern Europe and Asia, and were therefore small and stocky, rather than slender and swift like the Arab horses. Below is a group of Shetland ponies—smallest and most beloved of all the horses of northern lands. In their native islands these graceful little creatures run almost wild. They are popular all over the world, especially among children.



Photos by N. Y. Zoological Society

THE HORSE AND HIS STRANGE HISTORY



1. Gadha, or dwarf donkey. This is a small donkey from India. Another dwarf tribe from the Balearic Islands is often ridden by children.

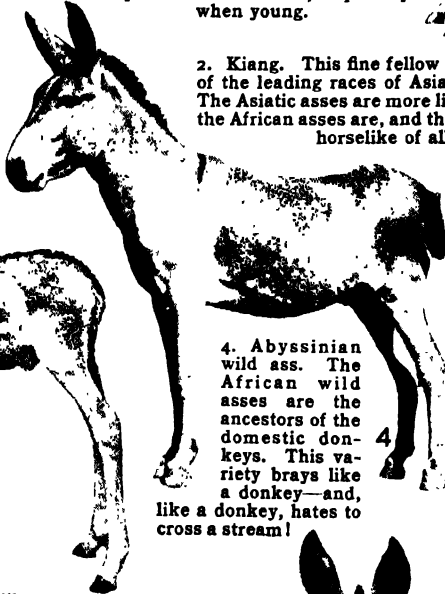


Here is a page of donkeys—cousins, wild or tame, of the patient little donkey we sometimes see in our stables. The home of the donkeys and zebras is in Asia and Africa. It is supposed that once, many ages ago, all the horse tribe wore stripes somewhat as the zebras do now. Many wild donkeys still have faint stripes here and there, especially when young.

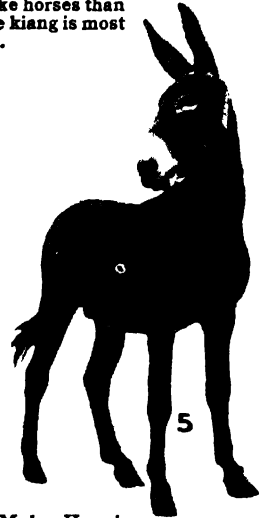
2. Kiang. This fine fellow belongs to one of the leading races of Asiatic wild asses. The Asiatic asses are more like horses than the African asses are, and the kiang is most horselike of all.



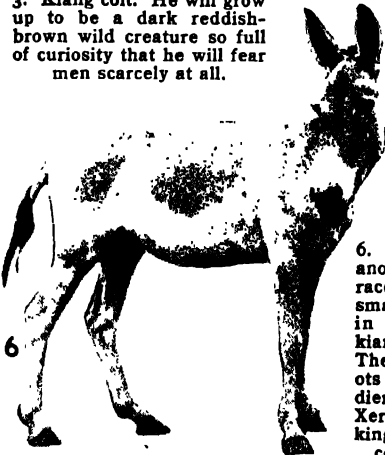
3. Kiang colt. He will grow up to be a dark reddish-brown wild creature so full of curiosity that he will fear men scarcely at all.



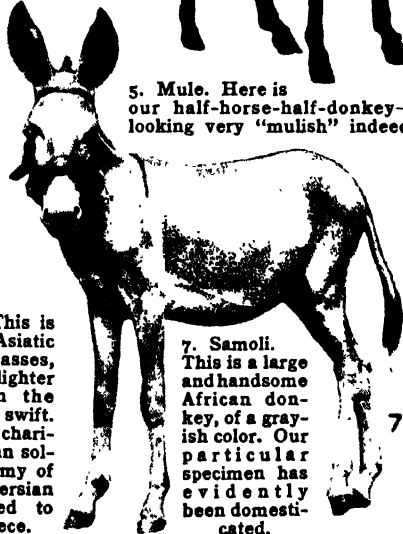
4. Abyssinian wild ass. The African wild asses are the ancestors of the domestic donkeys. This variety brays like a donkey—and, like a donkey, hates to cross a stream!



5. Mule. Here is our half-horse-half-donkey—looking very "mulish" indeed.



6. Onager. This is another great Asiatic race of wild asses, smaller and lighter in color than the kiang, but very swift. They drew the chariots of the Indian soldiers in the army of Xerxes, the Persian king who tried to conquer Greece.



7. Samoli. This is a large and handsome African donkey, of a grayish color. Our particular specimen has evidently been domesticated.

THE HORSE AND HIS STRANGE HISTORY

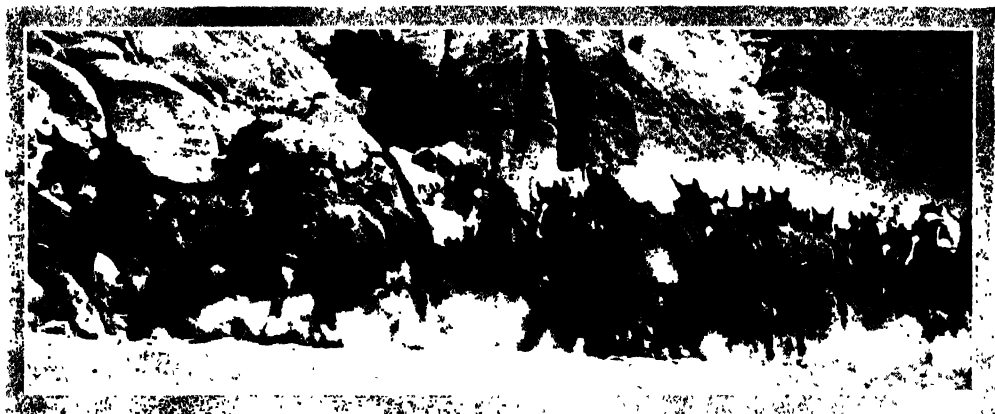


Photo by Wide World Photos

Sometimes in sparsely settled country horses will wander away and turn wild again like their remote ancestors. A herd of such wild horses may become a danger, especially if, as has happened with this herd,

it somehow becomes diseased. The picture shows a stampede in an Arizona canyon; government agents have been rounding up the diseased horses to exterminate them. There are about 50,000 in the whole herd.

to flee for their lives from the wolves, hyenas, saber-toothed tigers, and other savage beasts that infested the world unchecked in those early days. Soon, too, a new type of enemy arose to add to the perils which the fleet-footed animals were exposed to. A race of wild men appeared upon the scene, and they, as well as the wild beasts, now hunted and killed horses for food.

We know this because immense heaps of horses' bones have been found in and round about the old cave dwellings in Southern Europe, where cave men lived in the Stone Age, more than thirty thousand years ago. In the caves, too, were many of the rude weapons the men used when they went hunting—bone harpoons, flint knives, and bone javelin throwers. But most interesting of all were the drawings and carvings of the people and animals of those ancient times. These were scratched or cut on bones and stones with sharp flints, by the men who lived in the caves so many thousand years ago. Among them were several representations of horses and horses' heads, some wearing muzzles and bridles of twisted rope. And this tells us that even in those distant

days man was beginning to learn how to tame horses and use their strength and speed to his own advantage.

And so another upward step was taken in the progress of our friend the horse, who was to play such an important part in the story of man's rise to civilization.

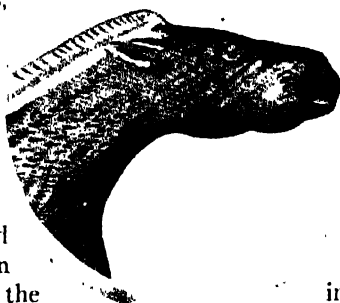


Photo by American Museum of Natural History

Some unknown artist of the Reindeer Age carved this horse's head in ivory.

The earlier civilized races of mankind used the horse chiefly in warfare, while the less valuable ox and ass were employed as beasts of burden. In the days of the ancient Greeks and Romans, kings and princes and great captains at first drove to the battlefields in chariots drawn by two or sometimes three fiery steeds; but it was not until later in history that warriors rode on horseback. The first horsemen seem to have been the wandering Mongol tribes who inhabited the great stretches of grassland in Asia between the Caspian and the Black seas.

As time rolled on, horses were employed in more peaceful occupations and came to be more and more necessary to the civilized nations of the world. They hauled heavy loads of stone and timber to build new towns and cities. They plowed the land

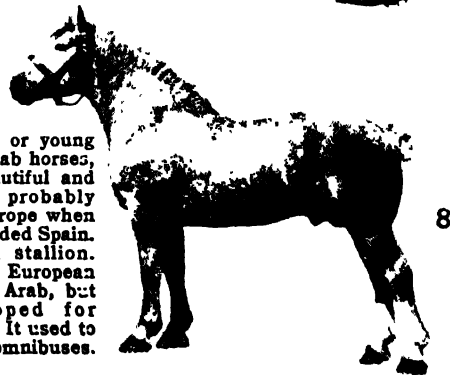
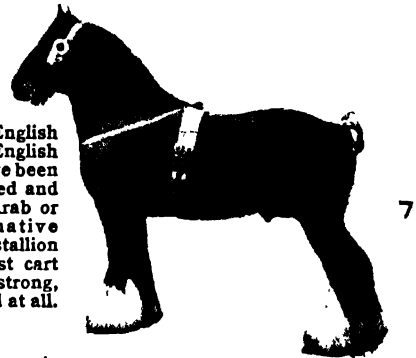
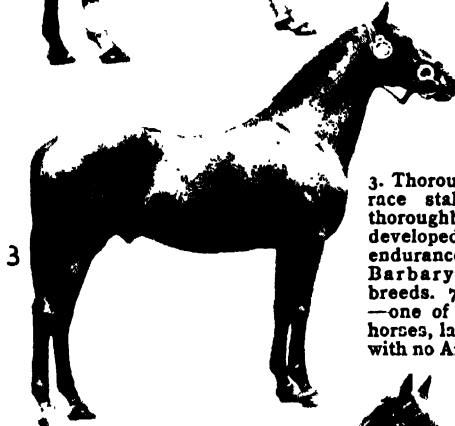
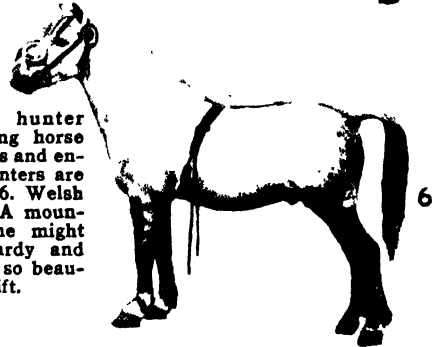
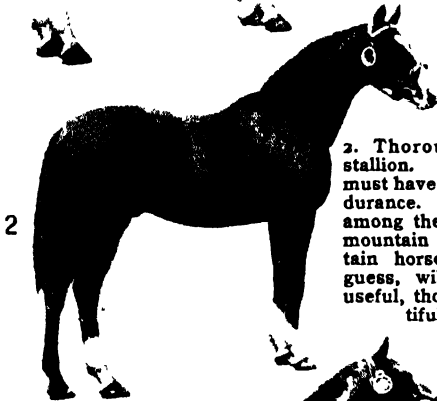
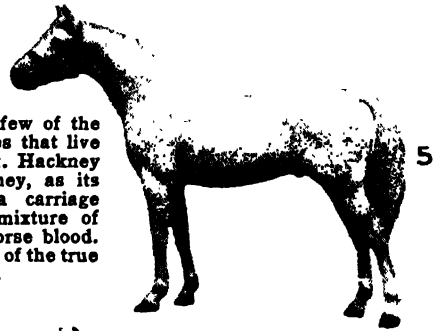
THE HORSE AND HIS STRANGE HISTORY

On this page are a few of the many kinds of horses that live in the world to-day. 1. Hackney stallion. The hackney, as its name implies, is a carriage horse. He has a mixture of racing and of cart-horse blood.

2. Thoroughbred hunter stallion. A hunting horse must have swiftness and endurance. Irish hunters are among the best. 6. Welsh mountain horse. A mountain horse, as one might guess, will be hardy and useful, though not so beautiful and swift.

3. Thoroughbred English race stallion. English thoroughbreds have been developed for speed and endurance from Arab or Barbary and native breeds. 7. Shire stallion—one of the finest cart horses, large and strong, with no Arab blood at all.

4. Arab filly, or young mare. The Arab horses, swift and beautiful and brave, were probably brought to Europe when the Arabs invaded Spain. 8. Percheron stallion. This famous European breed is part Arab, but was developed for strength, too. It used to draw London omnibuses.



THE HORSE AND HIS STRANGE HISTORY

No matter how many motor cars we build to do things we used to trust to horses, it is not likely that we shall forget our old friends altogether. Magnificent horses are bred, for instance, to do their marvels in the races, as on the famous American race track pictured here.

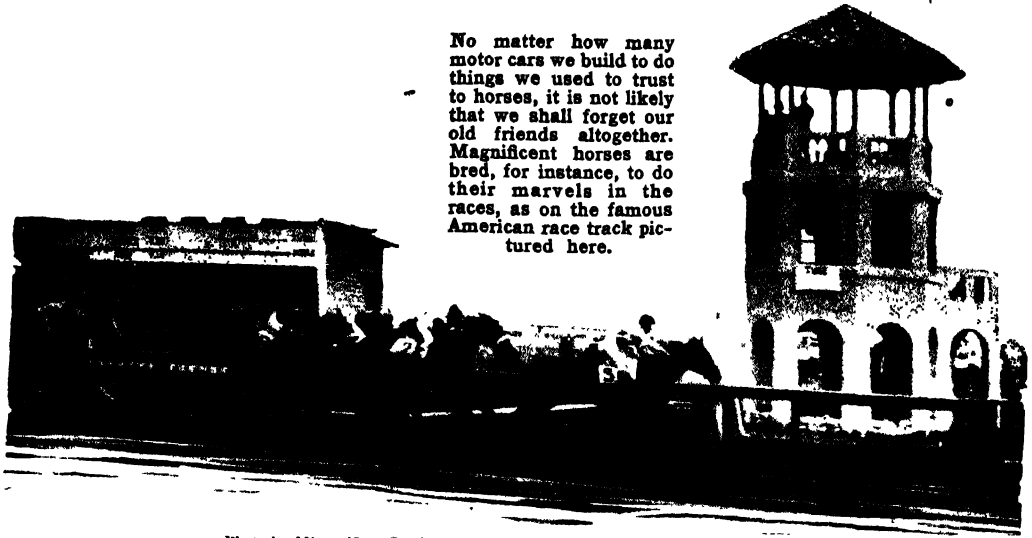


Photo by Miami News Service

and carried the grain, and so helped to feed the people. They moved coal and iron and merchandise of all descriptions from one place to another, and so new industries were started and trade was built up. And right up to the middle of the last century—before railroads and motor-driven vehicles had taken the place of horse-drawn traffic—those indispensable animals drew all the carts, wagons, coaches and carriages in which people traveled about in olden days.

Great-grandfather in a cut-away coat and broad-brimmed hat jogged along on his fast-trotting horse

when he took the road on business or pleasure. Great-grandmother, in balloon skirts and wonderful plumed bonnet, went out driving

This young Arabian filly is only fifteen hours old, but see how graceful and independent she is already! No wonder the small Californian on whose father's ranch the colt was bred, is proud of her new friend.

sedately in a carriage and pair with her coachman and footman on the box. And a journey that nowadays would take only a few hours in an automobile, was a most serious affair to our great-grandparents. They often spent several days upon the road, bowling along in a coach drawn by a team of spanking horses.

But the horse is no longer so necessary to us. Most of the important work he used to do is now done by machinery. Steam, electricity, and gasoline have taken the place of man's patient four-footed servant in transport, agriculture, and heavy tasks of almost every kind. Yet even in these days we cannot do without our friend the horse altogether, and we never forget how much we owe to his good services in the past.

Since those distant days when the first wild colts were caught and tamed by the wander-

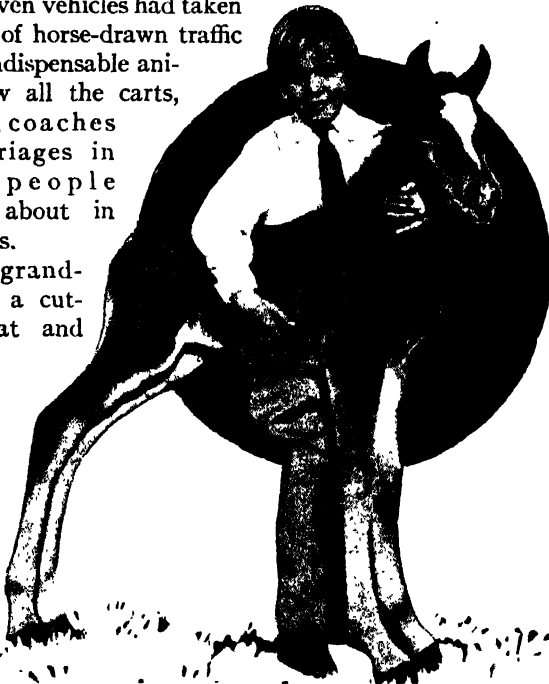


Photo by All Year Club of Southern California

THE HORSE AND HIS STRANGE HISTORY



Photo by Anderson

Modern horses could never accomplish their feats of strength and speed if it were not for the iron shoes that protect and strengthen their hoofs. In the paint-

ing tribes of Europe and Asia, horses have altered and improved in many ways. Their best qualities, their strength, swiftness, courage, and endurance, have been encouraged; their size has been increased or diminished by careful breeding. So there are now many horses of many different types, ranging from great burly cart horses, standing six or seven feet high at the shoulder, to pretty little Shetland ponies that are hardly bigger than a big Newfoundland dog.

Splendid, patient beasts are the real cart horses. They will plod along pulling the

ing above, Landseer, the famous English painter, has shown with superb skill and lively humor the scene in the smithy when the bay mare was shod.

heaviest loads hour after hour, and the carter who takes pride in his horses will tell you they need no whip. Some of these trustworthy giants come of heavy Flemish and British stock, while the finest of all, the shire cart horse, claims descent from the powerful battle charger owned by stalwart knights of old. A shire horse is a magnificent beast, with stout limbs and enormous hoofs clothed with a heavy fringe of shaggy hair which falls from above the knee. He weighs over a ton, and like his warlike ancestors, is so strong that he can pull three times his own weight. You see, the old

THE HORSE AND HIS STRANGE HISTORY

battle chargers had to be strong to carry the enormous weight of steel armor in which both they and the knights they carried were clad from head to foot. This armor was so heavy that when horse and rider fell they were often unable to rise from the ground.

Thoroughbred riding horses, hunters, and racers are the aristocrats of the horse tribe—fine, graceful animals with slender limbs, small hoofs, and blood of the splendid African barb and the famous Arab steed in their veins. They are high-spirited and nervous and need careful handling; but a thoroughbred horse is often very much attached to his owner, and sometimes refuses to allow anyone else to mount upon his back.

From their distinguished ancestors the modern thoroughbred horses have inherited their splendid proportions, their strength, swiftness, and courage. The Arab steed is a beautiful and gentle creature of which many tales have been told and songs sung. The Bedouin chief, who lives a wandering life in the Arabian Desert, is devoted to his horse. He would sooner starve than part with his "feet-footed friend and companion; and the horse returns his master's affection and understands his every word and sign.

Although they have been domesticated for so many hundreds of years, horses still keep the free, independent spirit of their long-lost wild ancestors. Every horse must be "broken to harness" and must be trained with the greatest patience by someone who understands the ways and tempers of his kind. Without this training he will never submit to be curbed by the bit and bridle. The horse has a very curious mouth, and this is partly the reason why it can be taught to obey its rider or driver. Between the front cutting teeth and the back grinders is a gap into which the bit is slipped. The bit is a smooth bar of steel with a crossbar and a ring at each end. The driving reins are fastened through these rings; and by gently pulling the right or left rein you can guide your horse in any direction you please.

Although he is not so intelligent as a dog the horse, by patience and kindness, can be

taught many lessons. He has a remarkable sense of time, and can be educated to walk, trot, march, and even dance to music; and a military horse understands and obeys all the bugle calls and military signals.

How Modern Horses Came to America

America is famous for its well-bred and highly trained horses, especially for its "trotting horses"; yet none of them come from native stock. For although it seems certain that it was in America that the marvelous story of the horse began, and though in bygone days large troops of wild horses roamed over both North and South America, those early horses had all died before the coming of the white man to take possession of the New World.

Why this was, we do not know. The horses may have been exterminated by beasts of prey, or they may have been wiped out of existence by some deadly pestilence. But anyhow, when the first Spanish settlers arrived from over the sea, at the close of the fifteenth century, there were no horses at all in the land. The native Indians, who had never seen a horse, were terrified when they saw the Spaniards riding the ones they had brought with them. The simple red men thought that the horse and his rider were not two animals, but one—an unnatural, mystical creature, half horse, half man, like the fabulous centaurs of old Greek legends. The troops of horses, called mustangs, that ran wild on the plains of South America at a later date, were the descendants of the animals brought over by the Spaniards and left behind by them when they abandoned Buenos Aires about 1535.

The only horses that can truly be called wild to-day are the tarpans, a race of sturdy little horses that wander in small troops over the Russian grasslands. But even the tarpans may possibly be the descendants of tame horses who escaped from their owners many years ago. And as the poor animals are ruthlessly hunted and killed by the Tatars and Russians, it is more than likely that in years to come there will be no wild horses left in the world.

GAME SANCTUARIES

Reading Unit

No. 24

REFUGES FOR THE WILD CREATURES

Note: For basic information not found on this page, consult the general Index, Vol. 15.

For statistical and current facts, consult the Richards Year Book Index.

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What is done for migrating birds?
Why has the war on mosquitoes made life harder for the birds?
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Why were the first English laws to protect birds made?
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Summary Statement

Birds are necessary to human life, but for a long time man did not realize this. Thanks to the Audubon Societies, the government now protects birds by laws and by setting up wildlife refuges. Our first national bird sanctuary was established by Theodore

Roosevelt in 1903. There are now scores of them. Many states also have set aside places where birds are safe. The most beautiful private "sanctuary" is the Bok "Singing Tower." We can all help the birds.

REFUGES FOR THE WILD CREATURES



The snow-white pelicans you see here have made themselves at home in a refuge which thoughtful people have provided for them. There they may bask

or preen themselves unmolested, or enjoy their favorite sport of diving for fish. Few birds are quite so much fun to watch as pelicans are.

REFUGES *for the* WILD CREATURES

Hard Beset by Ruthless Hunters the Graceful Inhabitants of the Forest Can at Last Find Retreats Where They May Be Safe from Their Foes

WILD animals are among man's best friends. To be sure, he has always hunted them mercilessly, and some varieties he has wiped out entirely. But in spite of his cruelty and stupidity in doing so, he still is dependent on them for his very existence upon the earth. If the birds, for instance, were suddenly to vanish, all growing things would be destroyed by such a plague of insects that man, for all his inventions, would be helpless to defend himself and would soon die of starvation.

Why Man Has Warred on the Beasts

There was a time when early man stood in great terror of the larger wild beasts, but for most of us to-day wolves are met only in fairy tales and bears stalk about in a few national parks and such pens as they have in the zoo. It is only in sparsely settled parts of the earth that wild animals are still a peril. Since this is so, man has begun to realize what a mistake he has made in warring so mercilessly on his humble friends,

and in all civilized countries he is taking steps for their protection.

Our Friends the Birds

Of all the wild creatures birds are man's best friends. They serve us in a good many different ways. They cheer and delight us. They give us food. But most important of all, they eat the insects that destroy our trees and wipe out the farmer's crops. We have been slow to recognize their claim upon us, but gradually, thanks largely to the work of the National Audubon (ó'dóo-bón) Societies, our government has taken more and more pains to protect them. To-day the Bureau of Biological Survey, under the Department of Agriculture, employs hundreds of people to investigate and help protect our wild life and direct the war against animal pests. Organizations like the Audubon Societies, the Camp Fire Girls, and the Boy Scouts and Girl Scouts are helping awaken Americans to the importance of birds. The United States and her possessions

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are dotted with wild-life refuges, some owned by the government, some by towns and states, and others by private persons.

What Is a Bird Sanctuary?

A bird refuge is commonly called a bird "sanctuary," (sǎngk'tû-â-rĭ). A sanctuary is primarily a holy place. The use of the word to mean a place of safety takes us back to ages now gone by, when men pursued by their enemies might take refuge in churches or temples and be safe from harm. That is the idea of the bird sanctuary. Everything possible is done to protect birds from hunters and marauders, from hunger and thirst and cold, and from other animals that might molest them. Guards patrol the place, and often the reservation is inclosed by a high wire fence.

Our National Refuges

The first bird sanctuary to be established by our national government was Pelican Island, Florida, set aside by President Theodore Roosevelt in 1903. Since then scores of wild-life refuges have been opened. They are situated at suitable spots in the United States, Alaska, Hawaii, and Porto Rico. The smallest of them, Hog Island, Wisconsin, covers less than two acres—not much more than a city block—and is the home of a large colony of gulls. One of the largest, extending for more than three hundred miles along the shores of the Hawaiian Islands, is a nesting place for several millions of sea birds. Another of the big ones covers the bottom lands for three hundred miles on both sides of the upper Mississippi River. Some of the sanctuaries, especially those in our southern states, serve for the winter protection of waterfowl. Others give a safe resting place to birds that are migrating. And still others, in the northern states, give the birds a safe place to nest. Some of these last, especially the Yukon Delta Reservation in Alaska, are among the largest nesting places in North America. Among our various refuges are six big-game preserves. The National Bison Range, in Montana, the largest fenced reservation, covers more than 18,000 acres.

The National Association of Audubon Societies conducts some fifty sanctuaries

of its own, scattered all the way from the Canadian border to the Rio Grande. One of its reservations, the Paul F. Rainey Wild Life Sanctuary in Vermilion Parish, Louisiana, is said to be administered the most successfully of any wild-fowl reservation in the country. Nearly all our states have set aside swamps, lowland marshes, or rocky uplands as sanctuaries for birds. Sometimes these are small—no more than a rocky islet perhaps—but often they are large tracts. Pennsylvania has devoted more than a hundred square miles to such reservations. Marshy refuges are more and more necessary as large areas of marsh are drained in our program for reclaiming land and stamping out mosquitoes.

The First Bird Sanctuary

No one will be surprised that a good many bird lovers have set up sanctuaries of their own. Dr. Samuel Osgood, a clergyman in Fairfield, Connecticut, was the first to apply to them the name now in common use. He called the grounds around his home "The Sanctuary of the Birds" (1862). One of the largest and most famous of the private reservations to-day is the Ward-McIlhenny Game Refuge in southern Louisiana, a tract of more than seventy-five square miles set aside by two bird lovers for northern waterfowl that winter along the Gulf of Mexico.

The Singing Tower

Another such privately owned sanctuary is at Mountain Lake, Florida. Here, midway between the Atlantic and the Gulf of Mexico, Edward W. Bok, the publisher, set up, on land that was utterly desolate, a bird sanctuary which is probably the most beautiful in the world. Fifty acres of land were planted to every shrub and tree and flower that grows in Florida. Two tiny lakes were constructed, and the whole was laid out by one of America's best landscape architects. In this Eden stands an exquisite Gothic tower built of pink marble and equipped with a carillon (kār'ĭ-lōn), or set, of sixty-one beautiful bells. Morning and evening the bells in this "Singing Tower" ring out, while a choir of countless birds living round about joins in the hymn. Nightingales from Eng-

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land—the only ones in America vie with our native songsters, and tall red flamingoes, standing moveless in the little lake, challenge the wild flowers for vivid color.

Why Birds Were First Protected

Though the idea of the bird sanctuary is fairly new, birds have for centuries been protected by law in many countries of Europe. But the purpose of such legislation was to insure the well-being, not of the birds, but of the titled gentlemen who wanted to hunt them. The first such law in England goes back to 1297, when peasants were forbidden to kill the hawks and falcons (fó'k'n) that noblemen used in hunting the smaller birds. Other such laws were enacted from time to time until by 1710 the birds of England had almost as much protection as they have to-day.

The Tragedy of Our Wild Life

Our own country was slow to protect its wild life. The first such law did not come here until 1872. Game was so plentiful that no one dreamed it possible to wipe out those vast herds of bison that roamed the plains or the flocks of wild pigeons so dense that they darkened the sky. The slaughter was unbelievable in its senseless cruelty and stupidity. Prairie chickens, wild geese, and wild ducks of a dozen varieties were killed with clubs and often left to rot.

A Helping Hand for the Birds

Naturally those days of abundance were soon over. As settlers opened up farm lands farther and farther west, buffaloes, antelopes, elk, and deer rapidly disappeared and would now be gone forever if it were not for the protection they get in our national parks and monuments. The birds, especially those that go south for the winter, were in as bad a way. Finally international congresses were called to devise laws to protect migratory birds from ruthless hunters and industrial concerns that killed them for their flesh or their plumage. Hand in hand with the passing of such laws sanctuaries have been established, and more and more state and

city parks, cemeteries, and wooded estates have been set up, where birds may be safe.

While it is true that our game laws even now are largely for the sake of the hunters, such protection makes possible a sport that adds large sums to the public treasury. The income from hunting licenses runs into large sums every year, and besides this the hunters must spend several million dollars for equipment and travel. Of course there is a certain return in sport and flesh. Our best economic reason for protecting the birds is found in the service they render the farmer. They destroy insects and insect eggs, devour seeds of harmful weeds, and even eat small creatures—such as field mice—which cost our farmers a quarter of a billion dollars a year. If we reckon only in terms of dollars and cents, bird refuges pay us a good deal more than they cost.

How Much Would You Miss the Birds?

But to those who love the birds and all wild things, the great reason for protecting them must always lie in their beauty and companionship. The song of the bird, his beautiful dress, his thrilling, joyous flight, all these are things the world can ill afford to lose. And they are things we may enjoy free of charge. All the birds ask is to be let alone.

Things a Bird Enjoys

Fortunately, those of us who love birds do not need an acre or more of land to set up a bird sanctuary. We may have one of our own no matter where we live. It will have no Singing Tower, but the birds will appreciate it, for all that. Anyone who will hang up a box or an empty can to serve as a home for a wren will soon find that a feathered tenant has adopted the place for his own. And anyone who will scatter crumbs on the crusted winter snow, or put out tiny pieces of suet, will find that the birds are flocking to his dining table. These are genuine sanctuaries for birds in need. The great sanctuaries that dot our country had their beginnings in just such simple acts of thoughtfulness.

